

What's Growing On



University of California

Agriculture and Natural Resources ■ Master Gardener Program

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January/February 2018

Upcoming Events—Mark Your Calendar!

There may not be much going on in the garden right now, but boy are we busy!

The Smart Gardening Conference on Saturday, March 3. I will be sending out the volunteer shifts this Friday for those that want to help out and earn some hours. There will be a \$10.00 fee to cover lunch.

Spring Open Garden Day on Saturday, April 14. more info will be coming soon regarding volunteer opportunities at that event.

Stockton Asparagus Festival April 20-22. We have been offered a free booth if we help out with the "How Asparagus Grows" display at the festival. MG's will be educating the public on asparagus production and growing asparagus (volunteers will be given info ahead of time on this topic)

Sunday, April 22 is the **Stockton Earth Day Festival** at Victory Park. We will have a booth once again this year.

We have lots going on, not to mention our monthly workshops, helpline office and gearing up for Farmers' Markets soon! There will be lots of opportunities to get your hours in!

Statewide Program Evaluations

The UC Master Gardener Program is implementing a statewide evaluation survey to understand behavior changes as a result of participating in public education events. The evaluation process is an important component of telling our story and the impacts we are making in our counties and statewide. Collecting data from participants at events and workshops is critical to our ongoing success.

If you are a room helper at any of our public workshops, it is very important that we get email addresses from class participants, even if they already get our newsletter.

Each county will receive a report with findings on a quarterly basis, maps will be compiled annually. Also included is a sample impact statement which will also be filled in annually with statewide program data.

For Master Gardener resources, including a FAQ guide, [click here](#).



Cool Tools: Herbicide Symptoms

Sample selection from gallery:



Identifying nontarget crop and ornamental plant damage from herbicides has become much easier, with the launch of a new [online photo repository](#) by the Statewide IPM Program.

Dr. Kassim Al-Khatib, weed science professor at UC Davis and Director of the UC Statewide Integrated Pest Management Program (UC IPM), has gathered nearly a thousand photos of herbicide-damaged plants, drawn from his own and others' research. The images are cataloged to show damage that can occur from 81 herbicides in more than 14 specific herbicide modes of action, applied in field to demonstrate the symptoms or when known herbicide spray has drifted onto the plant.

Each image is characterized with the name of the plant, mode of action of the herbicide, and notes the specific symptoms of damage. Together these photos provide a comprehensive archive of damage to over 120 different crops and ornamental plants by known herbicides, which users can easily compare with what they see in the field.

This user-friendly database contains additional information briefly describing modes of action of various herbicides, herbicide damage, ornamental and crop plants included in the database, and an index of example herbicide trade names and active ingredients.



What's Wrong?

Do you know what is wrong with this rose bush? You can find the answer on page 7.

How Do I...

How do I print the mileage sheet to turn in with my taxes?

If you have been entering your mileage when you enter your hours you can print out your own record to submit with your taxes each year. First, you will want to log into VMS and look at your hours. You will see 2 empty boxes that you will want to put the appropriate date range in for the tax year you are reporting (see photo below). Once you have entered the dates, click on the submit button and you will see just the hours for the date range you entered. Click on the "Create Excel" button and ta-da!

San Joaquin County

Volunteer Hours Report

[Expanded Report](#) | [Show Removed Volunteers](#)

Start Date:

End Date:

Did you know... You can hover your mouse over anything that is blue and underlined and by clicking on it you will be directed to a webpage with more information about that subject! Try it!!



American Rose Trials for Sustainability Mission:

To identify, through regional evaluation and testing under low input conditions, the most disease and pest resistant, hardiest and most garden-worthy rose cultivars and to provide objective, accurate and reliable information about the cultivars tested for each region to industry professionals and the gardening public.

A Rose is a Rose—or Is It? **Karrie Reid—SJ Environmental Horticulture Advisor**

The word "rose" conjures up different images and feelings for different people. As landscape features they have long had a reputation for being garden princesses that require ample water, careful fertilization, and fungicide and insecticide treatment. Additionally, most people think they need to be pruned in very specific ways ("prune to a leaf of 5 leaflets"). But roses come in a large number of classes and species, and hybridization over the years has produced some really remarkably sturdy roses with none of these requirements to bloom and look great over a long season.

In the [UC Landscape Plant Irrigation Trials](#), we have evaluated the water use and performance of 17 different landscape roses in hot, dry Davis. We have discovered that most of them perform beautifully on the low end of [moderate water use](#), or about half of what a [cool-season turfgrass, like tall fescue, needs](#). In our trials, the plants receive no fertilizer, no pesticides of any kind, and no special pruning techniques. During the late winter, we simply chop them down to about knee level! We actually learned this method from the director of the International Rose Test Garden in Portland, Oregon. The low-growing carpet roses get a cut back with electric hedge trimmers.

The secret to their performance on this irrigation level is the establishment year. We plant from bareroot stock in late winter, and water them through the first summer on regular, deep irrigation with a ring of drip irrigation tubing in the root zone of each plant- about once a week to a depth of 18 inches. We also use 2-3 inches of chipped wood mulch. The second summer they are good to go on only monthly irrigation with 14 gallons of water per plant, or about 3". If you are working with sandy soil, you would need to irrigate more frequently with less water.

New Rose Trial at the Ag Center

Beginning in 2018, we will be evaluating new rose introductions as part of the [American Rose Trials for Sustainability](#). These trials will be located in Stockton at the [Robert J. Cabral Agricultural Center](#), and will trial 20 new cultivars each year. Unused turf areas will be converted this next week to rose trial grounds, and I will post pictures of the conversion as it progresses. One of the selling features of converting the ornamental, but useless turf sections was the calculated water savings: 3,656 ft² of turf at 65% distribution uniformity would use 103,000 gallons of water, while 60 roses in the same area on drip will use 6,175 gallons, a 94% savings! Even though this is a trial layout, and not a densely planted landscape, that's still a great selling feature for converting this area to trials.

We look forward to finding more great landscape roses for sustainable California gardens.



'Icecap' rose from the Meiland breeding program

Rodenticides—Use, Issues and Nontarget Exposure

Niamh Quinn

Rodenticides are essential tools in the IPM toolbox for rodent management. Exclusion and cultural practices, such as landscape management and sanitation, are also very important tools that should be considered when managing rodent populations. However, persistent and chronic infestations often require the use of rodenticides.

Rats and mice are vectors of disease such as plague, leptospirosis, and salmonellosis. Commensal rodents are also associated with the onset of asthma and other allergies. Rats and mice can also cause structural damage through burrowing (mostly Norway rats) and by gnawing on wires, gas lines, and similar materials.

In residential environments, there are huge amounts of food available for rodents, making it difficult to attract rodents to traps using food. This practical challenge, coupled with the fact that rats can be extremely neophobic (afraid of new things), sometimes makes rodents difficult to manage using traps alone.

Rodenticides are generally used for quick “knockdown” of rodent populations in order to reduce exposure to disease and allergens, and to mitigate damage to crops and structures. One problem, however, is that rodenticides may negatively impact the environment. For instance, anticoagulant rodenticides (Table 1) are sometimes found within the tissues of nontarget wildlife.

Table 1. Active ingredients in rodenticides used in California.

Active Ingredient	Rodenticide class
Chlorophacinone Diphacinone Warfarin	1st-generation anticoagulant
Brodifacoum Bromadiolone Difenacoum Difethialone	2nd generation anticoagulant*
Bromethalin Cholecalciferol	Non-anticoagulant rodenticide

All 2nd generation anticoagulants are considered restricted use pesticides and therefore can only be purchased and applied by a licensed applicator.

Toxicants, particularly second-generation anticoagulant rodenticides (SGARs), can persist in rodent livers. Then, when the rodents are consumed by predators, the SGARs can be detected as residues in the livers of these predators. Predators may experience sub-lethal effects of rodenticide poison-

Rodenticides—Use, Issues and Nontarget Exposure

Check out the UC IPM Pests in the Urban Landscape Blog!

The blog provides a one-stop site for UC IPM news related to pests of homes, gardens, landscapes, and structures. We post articles from our newsletters as well as announce new and revised Pest Notes and other new educational materials or activities of interest to urban and residential audiences.



[Fig 1. Rodenticide bait station placed along exterior wall. These stations can also house snap traps instead of a rodenticide. \(Photo by N. Quinn\)](#)

ing (the animal's health may be affected but they do not die) in this way, but the effects on many animal species to this type of exposure is not well understood.

Assembly Bill 1687, *California Natural Predator Protection Act*, has been proposed to protect predators from rodenticide poisoning. It seeks to ban the application of the active ingredients in Table 1 in many situations in residential areas. The products listed in Table 1 contain both anticoagulant rodenticides and other rodenticides.

In order to use rodenticides carefully and effectively, it is critical that pest management professionals (PMPs) and residents alike apply all rodenticides in tamper-resistant bait stations (Fig. 1) and according to label guidelines. It is important for PMPs to consider the mode of action of a rodenticide bait, its toxicity, and when and where its use may be necessary. PMPs must especially consider the environmental implications of rodenticide use. Remember that rodenticides are only one part of an effective rodent management program.

For information about identifying and managing commensal rodents, see the UC IPM *Pest Notes* titled [Rats](#) and [House Mouse](#).



Do you have CE events to share?

Many of you subscribe to local nursery or garden club newsletters that may have possible CE opportunities for Master Gardeners. If you run across something that you think might count as CE, please send it to me so I can review the event. If it applies to our program, I will post it and share it with our group.



Phenology

Phenology is a key component of life on earth. Many birds time their nesting so that eggs hatch when insects are available to feed nestlings. In turn, insect emergence is often synchronized with leafing out in their host plants. For many people, allergy season starts when particular flowers bloom—earlier flowering means earlier allergies. Farmers and gardeners need to know when to plant to avoid frosts, and they need to know the schedule of plant and insect development to decide when to apply fertilizers and pesticides. Many interactions in nature depend on timing. In fact, phenology affects nearly all aspects

of the environment, including the abundance, distribution, and diversity of organisms, ecosystem services, food webs, and the global cycles of water and carbon.

Climate

Changes in phenological events like flowering and bird migrations are among the most sensitive biological responses to climate change. Across the world, many spring events are occurring earlier—and fall events are happening later—than they did in the past. However, not all species and regions are changing at the same rate, leading to mismatches. How plants and animals

respond to climate can help us predict whether their populations will grow or shrink – making phenology a “[leading indicator](#)” of climate change impacts.

What you can do

You can help track when lilacs, poplars, maples, oaks, dogwoods and other plants bloom. Sign up to help with this campaign by [clicking here](#).



Helpful Websites

[Master Gardener Only website](#)

Did you know that there is a page that is just for San Joaquin Master Gardeners? It can be found on our main SJ Master Gardener page if you look to the far left and scroll down to the bottom. You will need to sign in with your UC email and password to access this site (what you use for VMS).

What’s on this site?

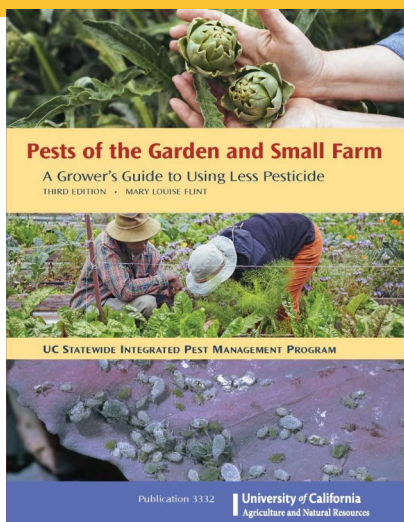
You can find links to commonly used websites like ANR Portal and VMS . If you missed a monthly meeting, you will find the [PowerPoint agendas](#) under the monthly meeting link. Are you working a farmers market shift with someone but can’t remember who they are? The [contact book](#) is a handy guide that has current Master Gardener contact info as well as everyone’s photo. Do you want to order [MG clothing](#)? There is a link

with all the info you will need. Know of someone that can use a [Sunshine card](#)? Fill out the online survey and we will get one in the mail.

There are lots of other things to explore that you will find useful and all in one spot! If you haven’t taken a look at it, what are you waiting for?!?



New Edition of Pests of the Garden and Small Farm



What's new in the Third Edition?

Includes the most up-to-date information on managing vegetable, herb and fruit tree pests with organically acceptable tools.

Over 30 new insect, disease and weed pests have been added.

Crop tables in the back have been

expanded to include 6 new crops and herbs.

Over 120 new color photographs added for a total of more than 400 color illustrations throughout.

Pests added to PGSF 3rd Edition:

- Arthropods
- Asian citrus psyllid
- Bagrada Bug
- Brown marmorated stink bug
- Citrus leafminer
- Katydid
- Kuno scale
- Leaffooted plant bugs
- Light brown apple moth
- Ligurian leafhopper
- Olive fly
- Pear psylla
- Spittle bugs
- Spotted Wing Drosophila
- Tomato/potato psyllid
- Tent caterpillars
- Plant Pathogens

- Eutypa dieback
- Fireblight

Weeds

- Annual bluegrass
- Dallisgrass
- Horseweed
- Hairy Fleabane
- Bristly oxtongue
- Prickly lettuce
- Burning nettle
- Common groundsel
- Chickweed
- Common lambsquarters
- Little mallow
- Mustards
- Spotted spurge
- Puncturevine

Master Gardeners get a 40% discount on ANR publications! Contact Marcy if you need the order form or check and see if we have it in stock.

What's Wrong Answer—Raspberry Horntail

Beginning in April, female horntails insert their eggs just under the epidermis, about 2 inches below the tips of the canes, causing pronounced swelling inside new shoots. The eggs hatch into very small larvae a few days after being laid. The young larvae spirally girdle the tips of the canes and cause wilting. The cane becomes weak in the area of the crook and often breaks at this point during pruning and training. The larvae later feed throughout the terminal portion of the cane, which often causes dieback. Cutting open the affected portion of the cane may reveal the thick white worm or the tunnel containing brownish granular material.



Raspberry horntail sawfly larva and frass.

Solutions: Regular pruning and disposal of wilted shoots can eliminate raspberry horntail within 1 or 2 years. Inspect canes regularly in spring and summer. Prune terminals off just below any wilted leaves or just below a pronounced swelling or discolored egg-laying incision that may be visible on canes. Insecticide sprays are not recommended. [Read more about them here.](#)

Gardening to Help Monarch Butterflies? Plant Natives. [KCET](#)

With the recent declines in numbers of monarch butterflies leading to the popular insect becoming a candidate for listing as an endangered species, more and more gardeners are thinking about growing milkweed. Milkweed, after all, is the only kind of plant monarch caterpillars can eat, and so growing milkweed in your garden means you're providing monarchs with a nursery and larder for their young.

But there's a problem: there are about 140 known species of milkweed, some of them potentially invasive in California wildlands. In fact, not all milkweeds are of equal benefit to monarch butterflies. There's even some thought that one popular tropical milkweed may be harming North American monarchs by [changing their migration habits](#).

Fortunately, there are fifteen species of California native milkweed that gardeners can choose from to give monarchs a helping hand. Not all of them are readily available in nurseries, but with a little searching you should be able to find at least one species appropriate for your part of the state.

In a [guide to milkweeds](#) recommended for California butterfly gardens, the invertebrate conservation group the Xerces Society recommends two widespread and widely available species of milkweed that not only do well across much of California but which are also reasonably easy to procure from nurseries, at least as seeds. Pictured above is one of the two: the narrow-leaved milkweed, *Asclepias fascicularis*. A relatively showy plant reaching about three feet in height with pink and white blooms, narrow-leaved milkweed is native to all of California save the hottest parts of the Low Desert and the coldest parts of the High Sierra.

With a blooming period lasting from May through October, narrow-leaved milkweed provides plenty of nectar for adult monarchs as well as many other species of beneficial insects. As with other species of milkweed, pinching off the blooms once they're spent, a process called "deadheading," can greatly prolong the blooming season. That way, the plant keeps putting out more flowers in an effort to produce seeds. (Let a few flowers go to seed toward the end of the summer, and you'll have plenty of seeds for next year's season.)

Gardeners in the vast swath of California characterized by big trees may do well to try growing the other species in the Xerces Society's top two Milkweeds: the showy milkweed, a.k.a. *Asclepias speciosa*. The species' common name is apt: under good growing conditions these plants can reach five feet in height, with a bloom potentially running from May through September if you take care to deadhead the faded blooms.

If you're lucky enough to have naturally moist garden soil here in droughty California, showy milkweed can be almost invasive, sending out aggressive creeping roots that can easily crowd out other garden plants. The Xerces Society is working to make seeds of both narrow-leaved and showy milkweed more readily available through retail nurseries: more information and a short list of nurseries is available in their [California milkweed](#)



Showy milkweed | Photo: [James Gaither/Flickr/Creative Commons License](#)

Gardening to Help Monarch Butterflies (continued)

[guide.](#)

Central and Southern California gardeners inclined to pout over the likely unsuitability of showy milkweed for their warmer, drier gardens can take heart: with a little bit of creative online searching, you can find a perfectly attractive milkweed best suited to more chaparrally gardens. California milkweed, or *Asclepias californica*, is a droughty, fuzzy-leaved milkweed that inhabits dry slopes from the Bay Area and Yosemite foothills to the South Coast.

About three feet tall at best with pink and purple flowers between April and July, California milkweed fits right into wild gardens in the California chaparral country. That's if you can find the seed. Scour local small native plant nurseries, or find gardeners (or owners of wild land) with existing California milkweed plants and ask them if you can have some seeds.

Searching for plants and seed may well bring you luck with a few other showy California native milkweeds, including the frankly stunning heartleaf milkweed (*Asclepias cordifolia*) whose photo we put at the top of this article. To be honest, the search for hard-to-find seeds can be half the fun of growing appropriate natives.

But some native milkweeds, especially those from California's deserts, are just unlikely to end up in commercial seed stocks any time soon: they're just too rare, and too hard to grow outside their native habitat. And thus the best way to use those rare milkweed species to promote the health of our monarch butterfly population is to protect the wild habitat in which they grow. That's especially important in the desert, where widely scattered populations of milkweed may act as crucial stepping stones in the butterflies' migration. Mojave milkweed (*Asclepias nyctaginifolia*), shown in the photo just above, provides an example of how a rare species can be devastated by inappropriate development of its habitat. A few years ago there were 25 known occurrences of Mojave milkweed in the state of California. But 16 of those occurrences were on the footprint of the Ivanpah Solar Electric Generating System, so there are a lot fewer Mojave milkweeds in California now.

Sometimes, it turns out, the best way to garden is to leave the plants where they are in the first place.



Ground Breaking Discovery Made in Preventing Devastating Citrus Disease—Kathy Keatley Garvey

In a ground-breaking discovery encompassing six years of research, an international team of scientists led by UC Davis chemical ecologist [Walter Leal](#) announced they've identified the sex pheromone of the Asian citrus psyllid (ACP), an insect that feeds on citrus and transmits the bacteria that causes the deadly citrus greening disease known as Huanglongbing (HLB).

Leal's team included scientists from UC Davis, University of Sao Paulo, and the Fund for Citrus Protection (FUNDECITRUS) from the state of Sao Paulo.

“Dr. Leal's discovery of the ACP pheromone is a significant breakthrough in preventing the spread of this serious citrus insect, and may offer a less toxic method for its control,” said IPM specialist Frank Zalom, distinguished professor with the UC Davis Department of Entomology and Nematology. He was not involved in the study.

“Having a lure to dramatically improve captures of this psyllid with the conventional sticky traps is a major progress toward integrated pest management,” said Professor Jose Robert Parra of the University of Sao Paulo.

Identifying the sex pheromone proved “complicated and quite a challenge” because of the insect's complex behavior and biology, said Leal.

Citrus trees infected with HLB usually die within five years, according to the [UC Statewide Integrated Pest Management Program](#). There is no known cure. “The only way to protect trees is to prevent spread of the HLB pathogen in the first place, by controlling psyllid populations and removing and destroying any infected trees,” UC IPM says on its website.

Native to Asia, the Asian citrus psyllid, *Diaphorina citri*, was first detected in the United States in June 1998 in Palm Beach County, Florida, and in California in August 2008 in San Diego County. Scientists discovered HLB in Florida in August 2005, and in Los Angeles in March 2012. The mottled brown insect, about 3 to 4 millimeters long, or about the size of an aphid, is now widespread throughout Southern California and is now found in 26 of the state's 58 counties.

ACP feeds on new leaf growth of oranges, lemons, mandarins, grapefruit and other citrus, as well as some related plants. Infected psyllids can transmit the bacterium *Candidatus Liberibacter asiaticus*, which causes the fatal citrus disease. An early symptom of HLB in citrus is the yellowing of leaves on an individual limb or in a sector of a tree's canopy.

Currently growers are using yellow sticky traps to detect the insect and to monitor the population. “Efficient lures,” Leal said, “are sorely needed for sticky traps, particularly for early ACP detection. Although ACP is present in Arizona and California, the disease itself has not been established, Leal said. “The



Asymmetrical yellow mottling of leaves and odd shape and greening of fruit, symptoms of Huanglongbing (citrus greening).

Ground Breaking Discovery Made in Preventing Devastating Citrus Disease continued

emphasis is on detection, eradication and limiting the spread of the disease. In Florida, where HLB is widespread, monitoring ACP populations is essential to avoid reinfection after eradication of infected plants.”

The detection of the pest has led to widespread eradication of citrus trees in China, Brazil and the United States. “In Brazil as many as 46.2 million citrus trees, representing 26 percent of the currently planted trees, have been eradicated since the detection of HLB in 2004,” Leal said. “In Florida, HLB has caused severe losses to the citrus industry. This year's production loss is estimated to be about 28 million fewer boxes of oranges than in 2014-2015.”

In response to the ACP invasion in California, the California Department of Food and Agriculture (CDFA) has launched an extensive monitoring program to track the distribution of the insect and disease. They check yellow sticky traps in both residential areas and commercial citrus groves, and also test psyllids and leaf samples for the presence of the pathogen.



[Adult Asian citrus psyllid on a finger.](#)
[Elizabeth Grafton-Cardwell](#)

Survey methods for ACP include visual inspections, sweep netting, and placement of yellow sticky traps in trees in citrus nurseries, commercial citrus-producing areas and residential properties throughout the state, according to the CDFA. They also place sticky traps in California fruit packing houses, specialty markets, retail stores and airports that receive such produce from areas known to be infested with ACP.

Since August 2008, ACP has been detected in 26 of California's 58 counties: Alameda, Contra Costa, Fresno, Imperial, Kern, Kings, Los Angeles, Madera, Merced, Monterey, Orange, Placer, Riverside, San Benito, San Bernardino, San Diego, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Stanislaus, Tulare, Ventura, and Yolo. “The ACP has the potential to establish itself throughout California wherever citrus is grown,” the CDFA says on its website.

[CDFA has set up a hotline](#) at 1-800-491-1899 for residents to report suspicious insects or disease symptoms in their citrus trees.

Resources:

[UC IPM California Department of Food and Agriculture \(CDFA\)](#) [Save Our Citrus: Hotline Information](#)

[UC IPM ACP Pest Note 8205](#)



**ASIAN CITRUS
PSYLLID ADULT**



**ASIAN CITRUS
PSYLLID EGGS**



**VARIOUS LIFE
STAGES**



**NYMPHS AND
WAXY TUBULES
WITH HONEYDEW**

Will Releasing Ladybugs in Your Garden Control Aphids?

Mary Louise Flint

Many retail nurseries and garden centers sell lady beetles for controlling aphids in gardens and landscapes. Gardeners often ask, “Does releasing lady beetles really work? UC research has demonstrated that lady beetle releases can effectively control aphids in a limited landscape or garden area if properly handled and applied in sufficient numbers. However, because of inadequate release rates or poor quality, lady beetles often fail to provide satisfactory control; other low toxicity aphid management practices such as hosing off or insecticidal soap or oil sprays may be more effective. Here are some things to consider if you decide to try lady beetle releases:



[Adult overwintering convergent lady beetles.](#)
[J.K.Clark]

Lady beetles deteriorate rapidly if not handled properly.

Lady beetles need to be kept refrigerated until they are released. Live lady beetles on display in stores are attractive for customers, but beetles left out at room temperature rapidly deteriorate. Also, lady beetles are often dehydrated and need water, especially if they have been held at room temperature, even for a few hours. Stores or gardeners are advised to mist lady beetles with water in a squirt bottle before placing them in the refrigerator for storage, making sure not to let water puddle in containers. Lady beetles produce unpleasant odors so avoid refrigerating them alongside food if possible. When purchasing lady beetles, inspect the container and make sure almost all beetles are alive.

Use adequate release rates. University research shows that high numbers of lady beetles are required to control aphids. One large, heavily infested rose bush in the landscape required two applications of about 1,500 lady beetles each, spaced a week apart. Packages of lady beetles sold in stores do not contain enough of these predators to effectively treat even one small shrub.

Lady beetles need a good supply of aphids. There is no point in releasing them on plants with few aphids. Lady beetles are voracious aphid feeders and an adult beetle will eat 50 or more aphids a day. The convergent lady beetle, which is the species sold for release, feeds almost entirely on aphids and will not remain on plants with low aphid populations and will not control other garden pests.

Release lady beetles at dusk or early evening. Lady beetles will fly away almost immediately if released during the heat of the day or where the sun is shining, so wait until evening to release them. Spray a fine mist of water on the plants before the release. Giving beetles a drink may keep them around longer. Place beetles at the base of plants or in the crotches of low branches. Lady beetles will crawl higher into the plant in search of aphids. Once lady beetles begin to fly, they are likely to fly a substantial distance, often outside the boundaries of your garden. Don't release lady beetles on plants that have been sprayed with insecticides. Residues from most insecticides are likely to kill the beetles. However, insecticidal soaps and oils, once dry, won't leave toxic residues.

Expect lady beetles to fly away in a few days. Even when released with care, lady beetles will fly away within a few days. About 95% of released beetles in research studies flew away within 48 hours. The remainder were gone within 4 or 5 days. Lady beetles are unlikely to lay eggs on the plants they are released on. If aphids return a week or two later, gardeners will need to release more lady beetles, hose aphids off with water, use insecticidal soap sprays, or wait for other native aphid natural enemies to fly in.

Are you remembering to log your volunteer hours?

2017 Master Gardeners need 50 hours of volunteer time

All other classes need 25 hours of volunteer time and 12 CE units.

Don't wait until the last minute to get them into VMS!



Low-water vs. Drought-tolerant

Karrie Reid—SJ Environmental Horticulture Advisor

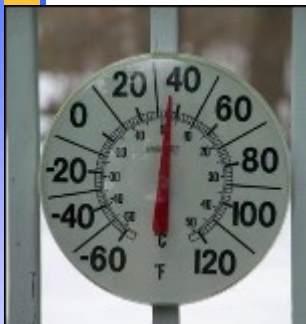
For decades the concept of "drought-tolerant" has been discussed in summer-dry areas like ours. A drought-*tolerant* plant is one that survives when the water is cut off. That's it. It doesn't necessarily have to look good, and in fact it may survive by losing all its leaves, going dormant, and generally looking terrible in the garden. Sure, when you irrigate again it may revive, but in the meantime you are left with a pretty sad looking landscape. No one wants that.

Low-water plants, on the other hand, are those that are adapted to live through times of water scarcity without drastically changing the way they look. In fact, they may be so efficient at using water, avoiding heat, and keeping cool that they look great, and perhaps even keep blooming during the hottest, driest time of year. The old concept of *xeriscaping* as a garden filled with succulents and gravel has been replaced by **Low-water Lush**, the new standard for the California landscape. **LUSH** means growing vigorously with luxurious foliage, lavishly productive, fertile, thriving, and it *is* possible on low-water! We've seen it with our own eyes for the last 10 years in the [UC Landscape Plant Irrigation Trials](#), (UC LPIT), but you've probably seen it in some of the emerging new gardens styles yourself.

How do you find plants to fill the Low-water Lush landscape? My first suggestion is to make a file of low-water trees, shrubs, groundcovers, and perennials for your area using the [Water Use Classification of Landscape Species](#) searchable database, often referred to as WUCOLS. From there, be willing to do some on-line searching for what you are interested in so you get an understanding of the eventual size and sun/shade preference of your favorites. Most garden centers and nurseries are now carrying lines of plants that are great performers on lower water levels, and the wholesale growers have dramatically expanded their low-water offerings. Independent garden centers will often order plants from these wholesalers for you if what you want is available.

Water restrictions aren't going away, and the droughts of the past *will* recur. Low-water landscaping is here to stay, so if you haven't already made the change, it's time to shift your focus to making all the landscapes you manage as water-efficient as possible. Fortunately, that doesn't have to mean they can't be lush.





Chill Out—Winter Chill Hours

You're happily choosing your bare root fruit trees when you suddenly notice extra numbers in the tree descriptions. Number of chill hours? Isn't it enough to know your [USDA plant hardiness zone?](#)

The growth of deciduous fruit and nut trees follows an annual pattern that changes with the seasonal transitions in the surrounding environment. Typically, temperate fruit and nut trees grow rapidly during the spring and first half of the summer. Later in the season, the growth rate declines. In the fall, the growth of deciduous fruit and nut trees stops as length of day and temperatures decrease, and the trees drop their leaves. In a reaction to length of day and temperature, growth inhibitors (hormones) are produced in the tree that prevent it from growing. In the winter months, the tree's internal processes are in a state of rest, known as dormancy, due to the presence of growth inhibitors. Growth will not occur even under ideal temperature conditions. This prevents the trees from beginning to grow during atypical periods of warm weather only to become damaged by normal freezing temperatures later on in the winter or early spring.

Dormancy is broken when sufficient cold temperature breaks down the

growth inhibitors within the tree. This is called vernalization, "chilling," or "winter chill." A specific number of cumulative hours of chilling (temperatures between 32°F–45°F), are required to break dormancy, which varies from variety to variety. Once the appropriate number of hours of chilling have been achieved by a variety, active growth resumes in the spring, but only after trees are exposed to warm enough temperatures for natural growth processes to begin. Most of Northern California receives between 800 and 1,500 hours of vernalization each winter. Southern California may only receive 100–400 hours. December and January are usually the most critical months. If each of these two months has approximately 400 hours of temperatures below 45°F distributed fairly evenly, then troubles related to mild winters are less likely.

Temperate trees and shrubs grow best in climates in which the winters are warm enough that plant tissue is not killed from extreme low temperatures, but not so warm that buds receive inadequate chilling to break dormancy. Flower and shoot buds of deciduous fruit trees and olives (evergreen) will grow normally in the spring only after exposure to sufficient winter cold. After winters with inadequate chilling, the plants leaf out late in the season (delayed foliation), blossoming is prolonged, buds may deteriorate, buds may drop, and few, if any, flowers are

produced. Without flowers, there is no fruit to harvest. For a list of Temperate Fruit and Nut Trees that grow well in California, [click here](#).

Over the years, plant scientists and breeders around the world have been selecting and developing varieties that require less chilling to break dormancy and resume growth, usually <300 hours of cold temperatures <45°F. The development of these varieties has extended the range of climates and latitudes in which temperate tree fruits and nuts can be produced in California and elsewhere. Varieties that require fewer hours of winter cold temperatures to break dormancy in the spring are known as "low chill" varieties.

HOW TO COUNT CHILL HOURS

Here's the best way to count chill hours: get someone else to do it! Luckily, there are institutions already tracking this information. Farmers and gardeners in most California counties have access to official data on chill hours through the [Pomology Weather Service](#) at the UC Fruit & Nut Research Information Center. This service records chill hours—so you don't have to. Just scroll down to our county and select the nearest CIMIS station closest to your location. For a list of chill requirements for commonly grown fruit trees in our area, [click here](#)

Avoid Pruning Apricots and Cherries in Cool Season

Chuck Ingles, UCCE Sacramento Farm Advisor

Most people think about pruning fruit trees during the winter since the branch structure is most visible and winter is considered the traditional time to prune deciduous trees. Actually, pruning fruit trees mainly during the growing season is a good practice and with some species such as apricots and cherries, pruning between September and March in northern California could lead to detrimental canker diseases.

Cherries, apricots, and a few related species are particularly susceptible to fungal and bacterial canker diseases, including *Eutypa* dieback, *Botryosphaeria* canker, and bacterial canker. Pathogens can be spread by rain or tree wounds – such as pruning wounds – during wet weather; subsequent infections spread through the wood for several years and may eventually kill the tree. When trees are infected, limbs or twigs may wilt and die suddenly in late spring or summer with the leaves still attached. Bark may be darkly discolored and amber-colored gumming may ooze (Figure 1). Infected areas in the interior of the wood are discolored brown (Figure 2) sometimes in wedge shapes; with bacterial canker the cambial area will turn red or speckled red and then brown. To remove such infections, cut infected limbs at least one foot below any internal symptom of the disease, preferably during the dry season when infection risk is lowest.

The best practice is to avoid pruning these susceptible species during the typical rainy period from September through mid-March. Rains after March can still lead to infections although tissue susceptibility to disease decreases with warmer weather. However, it is best to avoid pruning altogether until at least late spring.

If growth is very vigorous, the first summer pruning can be done in late May or June, at which time many strong upright shoots can be removed to allow sunlight to reach lower fruiting branches. Doing the final pruning in July leads to excessive regrowth later that summer. The main or final pruning should be in August, but heavy pruning, especially at that time of year, may lead to sunburned branches, so leave spurs and some other shoots to provide some shade. Alternatively, whitewash west- and south-facing branches with a 50:50 mixture of interior, white latex paint and water to prevent sunburn.

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A cross-cut into the infected branch reveals a large fungal canker in the wood; the infections continues into the trunk.

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We have SGC bookmarks available! Let Marcy know if you want some to help promote this event.



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Cost: \$25.00 (includes lunch)

Registration and conference information:
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Just Because It's Really Cool

Raku Inoue is an artist that uses flower arrangements to create lifelike beetles, butterflies and other bugs.



Advise To Grow By



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