



University of California
Agriculture and Natural Resources

UCCE Master Gardener Program
Orange County

The Garden Beet

Summer 2019

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This newsletter is provided by the UCCE Master Gardener Program of Orange County.

The mission of the Master Gardener Program is to extend research-based knowledge and information on home horticulture, pest management, and sustainable landscape practices to the residents of California and be guided by our core values and strategic initiatives.

Visit our website at
<http://mgorange.ucanr.edu>

Contact the Garden Beet at
gardenbeet@ucanr.edu

Summer in the City

A common challenge for Master Gardeners is adapting research findings to meet the needs of home gardeners. For instance, steps which might be practical, even imperative to protect the yield of a commercial citrus grove from Asian Citrus Psyllid are far more challenging to implement for the lone dwarf citrus maintained by a backyard grower.

Yet this issue focuses on the opportunities afforded to smaller-scale more diverse suburban and urban landscapes which are not available to commercial growers. This could take the form of tolerating a little imperfection while waiting for “good bugs” to build up their numbers to knock down pest populations. It could involve more intensive soil creation by setting up a vermicompost bin to capture kitchen scraps and junk mailers or learning how to identify the diversity of largely-harmless fungi doing their part to rebuild the soil structure. It could mean diverting some water from laundry, showers and sinks to irrigate the landscape before recharging the water table. Be sure to bring all your urban farming questions to the OC Fair where the Master Gardeners will be out in full force to share research-backed tips.



Image: Robin Russell

Ladybird Beetles

By Linda Genis, UCCE Master Gardener of Orange County

You may have memorized the poem – “Ladybug, ladybug, fly away home...” You may have read the book – [The Grouchy Ladybug](#). You may have even brought them into your garden. But how well do you really know these six-legged carnivores?



H. convergens
Image: [ANR repository](#)

Ladybird beetles (they are not true bugs) are members of the Coccinellidae family. Two hundred species live in California. The most common ladybird beetle is the convergent lady beetle (*Hippodamia convergens*) which is the variety sold in nurseries.

Most “ladybugs” you purchase at a nursery are not raised on ladybug farms or in greenhouses. They are collected from the Sierra foothills in locations kept secret and known to a small group of ladybug harvesters. Ladybugs are harvested in the fall, when they are dormant. They gather at the base of

trees, where it is easy to scoop up large quantities. Currently, ladybug harvesting falls in a legal gray area. Most harvesting is done on federal lands, and permits were issued by the US Forest Service. The process was turned over to the California Department of Fish and Wildlife in 2015, and California does not have a permitting process in place. If you’re interested in the harvesting process, you can watch a Huell Howser [video on YouTube](#).

Ladybird beetles became important in California in 1888, when an infestation of cottony cushion scale threatened to destroy the citrus industry. An orange beetle with black spots called the Vedalia beetle (*Rodolia cardinali*) and a parasitic fly (*Cryptochaetum iceryae*) were imported from Australia to prey on the cottony cushion scale. After a testing period, the insects were bred. Hundreds of thousands were released into the orange groves and, within a year, cottony cushion scale was no longer a problem. This is one of the first documented cases of the use of a biological control to manage pests.

The ladybird beetles that sometimes gather indoors are [Asian lady beetles](#) (*Harmonia axyridis*). They are beneficial insects brought to the U.S. to control pests on pecans and apples. They do not harm humans, but can produce an unpleasant odor and may affect people with allergies. The best way to get rid of them if they gather in your home is to use a vacuum cleaner.

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Ladybug larvae
Image: Linda Genis

Does releasing ladybugs in your yard actually help reduce aphids? First, be sure the ladybugs you buy have been refrigerated and are still alive. Ladybugs should be released at dusk or early evening. They need a big supply of aphids to eat, as each ladybug can eat 50 aphids per day. If you have a serious infestation of aphids, you will probably need more ladybugs than a normally packaged in one box – more than 1,000. And since the ladybugs will fly away in a few days, you will need to purchase more. Using a garden hose to knock the aphids off their host is easier and may be just as effective.

Ladybird beetles can be challenging to identify because larvae look nothing like the adults and because adults resemble a harmful beetle.

Since ladybird beetle larvae look nothing like the adults, these larvae are sometimes squished by people who mistake them for a harmful insect. The larvae of the [cucumber beetle](#) (*Diabrotica undecimpunctata*), however, feeds on curcubit roots and are difficult to control. The resulting beetle might masquerade as a beneficial with its yellow body and black spots, but it is indeed very harmful.

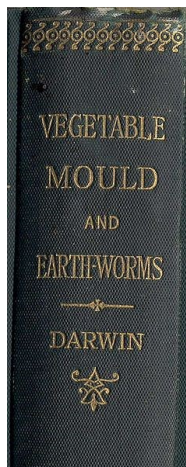


Cucumber Beetle
Image: [University of California](#)

Enjoy ladybugs when you discover them in your landscape, but realize that they would not be there if there wasn't something for them to eat. We strive not for perfection, but balance.

Ed's Garden Talk: "As the Worm Turns"

Edward Shaw, UCCE Master Gardener of Orange County



Some 2200 species of earthworm are to be found everywhere on earth except in its arid and arctic regions. Their invaluable role in the soil was first noted in the late 19th century by Charles Darwin, who, after 40 years of detailed study, observed, "It may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly organized creatures." He was obsessed with them and his book on earthworms in its initial run actually outsold his more famous work, On the Origin of Species.

As earthworms tunnel through the soil, they take in soil and organic material that is partially broken down as it passes through their gut and then deposited outside their burrows as castings. This work by earthworms results in both improved soil structure and better soil fertility. Their burrowing process aerates and loosens the soil, thereby facilitating entry of water, oxygen and fertilizer and promoting root growth. It also contributes to reduced erosion and favorable conditions for beneficial microorganisms.

In addition, earthworm castings are an important fertilizer source that is rich in nitrogen, phosphorus, potassium and micronutrients. This fertilizer gets spread throughout the soil as the earthworm performs its work. Many horticulturists believe that it is superior to chemical fertilizers available commercially. Not all earthworms dwell in the soil. Some can only live in compost or on the soil's surface and will not survive for long in the soil itself. Likewise, the soil dwellers (which are categorized as either topsoil dwellers or subsoil dwellers) will not survive in compost.

Commercial vermicomposting companies use composting worms like the tiger worm (*Eisenia foetida*), which survive nicely in compost bins where they have an abundant supply of organic matter. Unfortunately, most soils do not have sufficient organic matter for them to survive. On the other hand, an earth worker like the common night crawler (*Lumbricus terrestris*) is not employed in vermicomposting because it cannot live in compost bins. Earthworms feed during the cool of night and may consume 50-100% of their weight daily



L. terrestris
Image: Donald Hobern

in organic matter such as leaves, grass clippings, fruits and vegetables and animal dung. This is no mean benefit that nature has provided!

There are a number of cultural practices that can encourage earthworm activity:

- Undertake soil management practices that increase organic matter in order to increase their food supply.
- Try to provide sufficient moisture but not too much of it. Earthworms cannot tolerate soggy soil but must have damp skin to survive.
- Earthworms do not like temperature extremes. Mulching provides a cool, moist environment that they favor.
- Earthworms prefer alkaline conditions, so adding lime to the soil may encourage them in areas where the soil pH is below 7.

The only complaint about earthworms seems to be that when their population increases, their castings can accumulate to the point where they create a nuisance by clogging surface drains. This problem can be easily dealt with by placing screens over drainage holes and by breaking up castings on lawns with a rake.

Vermiculture

Excerpt from California [Master Gardener Handbook](#) pages 56-57

The practice of raising redworms in boxes and feeding them kitchen wastes is known as vermiculture. Because worms eat their own weight each day, a pound of worms eat a pound of food every day. Natives to Egypt, redworms are often known as manure worms. It may be necessary to purchase worms to get the box started. Many gardeners are interested in vermiculture for its recycling attributes and for the worm castings, which provide a high-quality soil amendment with some fertilizer effects.

Vermiculture requires a box with a hinged lid (about four feet long by two feet wide) and $\frac{3}{4}$ -inch holes drilled on all sides. The box should be covered with a screen and placed on a stand so air can circulate under and around it. Bedding for the worms can be well-shredded newspaper or any loose organic matter. The worms must be kept moist in a cool, shady place and should be fed daily or every few days with kitchen wastes. After the worms have turned all the bedding and food into rich castings, the castings should be pushed to one side of the box and fresh bedding and food added to the empty side. In a few days to a week, the worms will have moved into the new area to feed, and the castings can be used in the garden. A screen with large openings can also be used to divide the box into two compartments.

Use of Graywater in Urban Landscapes

Excerpt from California [Master Gardener Handbook](#) pages 104-106

The use of graywater to irrigate landscape plants is increasing throughout the United States, particularly in California and other arid states. In the United States, *graywater* most often refers to wastewater that originates from residential clothes washers, bathtubs, showers, and sinks, and it excludes wastewater generated from kitchen sinks, dishwashers, and toilets (black water).

Using graywater to irrigate landscape plants can conserve water and electricity and reduce water bills by recycling water otherwise destined for a wastewater treatment plant. Since an estimated 30 to 50% of home water use produces graywater, significant savings can be realized by reusing this source of non-potable water to irrigate landscape plants. A typical household (2.6 people) produces an average of 90 gallons of graywater each day. While most graywater systems will not supply enough irrigation water to irrigate an entire traditionally landscaped yard, most can supply one-half to three-quarters of the water required by a drip-irrigated water-efficient landscape with limited or no turf. [However, routing graywater through a drip system itself is discouraged because the organic solids in graywater can cause clogging].

The potential risks should be carefully evaluated before deciding whether to install a graywater recycling system. Graywater varies substantially in quality and potential risks from site to site. Many household cleaning products, as well as shampoos, soaps, and detergents contain dyes, bleach, chlorine, sodium, boron, and phosphate, which can pose significant human and environmental concerns and can injure and even kill plants at high dosages over a short period or smaller dosages over a longer period.

- Regardless of what graywater system is chosen, the following precautions should always be taken:
 - Carefully label all valves and pipes associated with your graywater system and prevent backflow.
 - Do not store graywater more than 24 hours.
 - Wear gloves and do not come into direct contact with graywater.
 - Do not let graywater pool or run off the soil surface or come into contact with well water.
- Do not irrigate edibles with graywater or allow it to splash onto neighboring edible plants.

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Three-way valve on a laundry-to-landscape system
Image: Sustainable Sanitation Alliance

- Do not irrigate turfgrass or ground cover areas with graywater, since potentially harmful microorganisms can remain on the surface.
- Do not use graywater contaminated with human waste, infectious disease organisms, grease, paint residue, gasoline, solvents, or other chemicals found in household and industrial products.
- Keep the graywater system simple and avoid systems requiring heavy upkeep and maintenance. Contact a professional with experience designing and installing graywater systems if you lack the specific knowledge or time to undertake the project yourself.

Laundry-to-landscape graywater systems are relatively simple to install and are inexpensive. The hose exiting the clothes washing machine is attached to a valve that separates graywater from water destined for the sewer. The graywater is diverted through a 1-inch main irrigation line with ½-inch tubing outlets placed throughout the landscape terminating in a valve box set in what is termed a mulch basin that surrounds plants being watered. The washing machine pump distributes water directly to the landscape with no filter. A vacuum break or backflow prevention device may also be needed. Keep in mind that salt-free and boron-free liquid laundry detergents should be used for irrigating the landscape. In addition, chlorine bleach should be avoided.



Mulch basin

Image: Sustainable Sanitation Alliance

Mulch basins receive and distribute graywater to plant root zones and are constructed by removing several inches of soil and replacing it with coarse organic mulch. These basins are established in bed areas or near plants so that the graywater reaches plant root systems. They must be sized correctly to prevent surface ponding. Sizing depends mainly on soil texture (sandy loam, clay loam, etc.). Graywater percolates quickly through sandy soil, requiring minimal mulch. In slower-percolating clay loam soil, a larger mulch basin is required around the valve box to prevent graywater pondage. Large wood chip mulch is more durable and longer lasting than smaller wood chip mulches or shredded fiber.

All laundry-to-landscape systems not requiring a permit are required to:

- Be equipped to direct flow back to the sewer (e.g., a three-way valve)
- Have valves and direction of graywater flow clearly labeled
- Supply graywater to landscape plantings only on the homeowner's property
- Include an operation and maintenance manual
- Discharge graywater underneath a 2-inch cover of mulch, plastic shield, or stone covering

WHERE DID ALL THE CHICKS GO?

By Therry Vargas, UCCE Master Gardener of Orange County

Typically, this is the time of year that you can go to the local feed store and pick up chicks to raise for your garden. There are hundreds of breeds to choose from, and depending on the breeds you select, you can end up with a carton full of colorful eggs about five to six months later; with eggs that have been colored naturally by the hen, in colors ranging from white, blue, green, and various shades of brown from cream to chocolate. However, this year there aren't any chicks to choose from, due to the continued outbreak of Virulent Newcastle Disease (VND) in Southern California.



Image: Lindsey Koob

Virulent Newcastle Disease, formerly known as Exotic Newcastle Disease, is a highly contagious, fast spreading, and deadly virus that can affect the respiratory, nervous and digestive systems of birds and is particularly fatal to chickens. Though no infected birds have been found in Orange County, the postal service is not allowing shipments of poultry into or out of zip codes 90000-93599, due to the regional quarantine imposed by the state veterinarian to prevent the ongoing spread of the disease.

Although VND is a foreign animal disease not normally found in the U.S., the USDA has confirmed more than 420 cases since May of 2018, including 134 in San Bernardino County, 247 in Riverside County, 42 in Los Angeles County, one in Ventura County, and one in Alameda County. The USDA also confirmed one case of VND in Utah County, Utah, and one case in Coconino County, Arizona. All confirmed cases are believed to be linked to the Southern California area.

Backyard chicken owners, as well as other poultry and bird owners, can help to protect their birds by taking these simple steps:

- Wash hands and footwear before and after entering an area with birds.
- Avoid sharing equipment. If you must share, disinfect before using or removing from property.
- Keep area clean and change food and water daily.
- Create boundaries, restricting access to your birds.
- Monitor your birds daily for signs of disease. Healthy birds are active, alert and social. Sick birds tend to be dull, antisocial and inactive.

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Additional information about Virulent Newcastle Disease and how to protect backyard chickens, as well as other poultry and birds, can be found at the following websites:

- [California Department of Food and Agriculture](#)
- [United States Department of Agriculture](#)
- [University of California Cooperative Extension](#)

Let's all do what we can to help eradicate this disease, even if it's simply sharing this information with other backyard chicken enthusiasts.

Hotline: Fungus Among Us

By Linda Genis, UCCE Master Gardener of Orange County

April showers bring May flowers, or in our case, February showers bring March flowers – and weeds, pollen, and fungi. Since our wet winter, inquiries about various fungi have become common on the hotline.

Just as some insects are destructive and others are beneficial, the same is true of fungi. “Of the 100,000 known species of fungi, more than 10,000 can cause disease in plants.” That means



Stinkhorn Fungus
Image: Hotline user

most fungi are not harmful. We eat fungi such as mushrooms and truffles. Fungi

also help break down organic material into components that can be used by green plants. Mycorrhizae are fungi that form a symbiotic relationship with the roots of green plants in which the plant's roots provide carbohydrates and the mycorrhizae help the roots take up water and minerals from the soil. (Not all green plants use mycorrhizae.)

Harmless fungi you may have seen in the garden after our rainy winter are bird's nest fungus, stinkhorn fungus, and dog vomit fungus, which is actually a slime mold. These, along with a variety of mushrooms, commonly occur on wood mulch and will not harm your plants. Do NOT eat any of these.

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Bird's Nest Fungus
Image: Wikimedia



Dog Vomit Fungus
Image: Hotline user

Fungi growing on a tree trunk is an indication of a serious problem with the tree as fungi grow on dead or decaying plant material. If the fungus is on a branch, the whole branch can be removed, but not all fungi on trees is treatable. For more information, consult [Wood Decay Fungi in Landscape Trees](#).



Tree Fungi
Image: Hotline user

Fungi aren't only present in the spring after a rain. Fungal diseases grow throughout the summer and are the bane of warm season vegetables. Common diseases associated with pathogenic fungi are powdery mildew, rust, blight, sooty mold, and root rot.

Since spores of various fungi are present in the environment all the time, is there anything the home gardener can do to minimize fungal problems?

The first line of defense is to buy resistant varieties of plants. Many vegetables are labeled with letters indicating the types of fungal diseases to which they are resistant (i.e. [see page 2 of this paper](#) for a tomato disease resistance key). There are also varieties of Grape myrtle that are more resistant to powdery mildew.

Sanitation can also reduce fungal problems. Diseased plant parts should be disposed of in the trash and not composted. Plant containers should be cleaned before they are reused, and tools should be kept clean.

There are organic and synthetic fungicides that are effective, but many are preventative rather than curative, so must be applied before a fungus affects the plants. For the best treatment for a specific fungal problem, read the Integrated Pest Management (IPM) plan that applies and use the recommended product according to package directions. To find the IPM plan, do an internet search of the name of the fungus followed by IPM – for example, “powdery mildew IPM”. Another great resource to learn all about IPM is the statewide UC IPM program website, <http://ipm.ucanr.edu>. Our hotline volunteers are more than happy to assist you with your plant problems and can be contacted at http://mgorange.ucanr.edu/Gardening_Hotline/



Rust on rose leaves
Image: Regents of University of California

ucceocmghotline@ucanr.edu

949-809-9760

CALENDAR: UCCE Master Gardener Events

JUNE

S	M	T	W	T	F	S
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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

6/1 9AM-Noon: **Landscape Design Class**

South Coast Research Extension Center
7601 Irvine Blvd, Irvine
Must [register](#)

6/1 11AM-Noon: **Citrus, Avocado, ACP + HLB**

Anaheim Packing District
440 S Anaheim Blvd, Anaheim

Thursdays 8:30-9:30 88.9FM KUCI
“In the Garden” radio show

6/6 **Garden Exercise Day**

6/13 **Weed Your Garden Day**

6/17 **Eat Your Veggies Day**

6/27 **Orange Blossom Day**

6/1 1-2PM: **Native Plant Garden**

El Modena High School Native Plant Garden/Nature Center
3920 E Spring St, Orange

Note: Garden has a separate entrance than the front of the high school

From the 55 freeway, take Chapman Ave. east.

Go down Chapman towards the hills for about 1 1/2 miles to Esplanade - Shell station on corner. Turn left.

About 100 feet north of Chapman there will be a double gate on your left going into a parking lot with portable classrooms. Go into the parking lot. There will be a large yellow vinyl sign by the gate.

6/1 2-5PM: **ACP/HLB Booth**

Westminster Public Library
8180 13th Street, Westminster

6/6 1-2PM: **Happy Hour Garden**

MV Murray Center
24932 Veteran's Way, Mission Viejo

6/12 4-5PM: **Butterflies in Your Garden**

City of Costa Mesa Community Garden
1855 Park Ave, Costa Mesa

6/22 9-10AM: **Warm Season Vegetables**

Reata Park
28632 Ortega Highway, San Juan Capistrano

6/22 11AM-Noon: **Senior Moments Herb Workshop**

Ladera Ranch Public Library
29551 Sienna Pkwy, Ladera Ranch

6/29 10-11AM: **Garden Workshop – Planting and Care of Citrus Trees**

Farm + Food Lab at OC Great Park
14280 Cadence, Irvine

JULY

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28	29	30	31			

7/7 11AM-Noon: **Succulents and Drought Tolerant**

Anaheim Packing District
440 S Anaheim Blvd, Anaheim

7/11 10-11AM: **Vertical Gardening**

MV Murray Center
24932 Veteran's Way, Mission Viejo

7/12-8/11: **OC Fair**

7/13 10-11AM: **Garden Workshop Planning the Small Space Veggie Garden**

Farm + Food Lab at OC Great Park
14280 Cadence, Irvine

7/13 9-10AM: **What's in Your Soil?**

Reata Park
28632 Ortega Highway, San Juan Capistrano

7/13 10-11AM: **Succulent Gardening**

City of Costa Mesa Community Garden
1855 Park Ave, Costa Mesa

7/20 9AM-Noon: **Composting**

Irvine Water District
15600 Sand Canyon, Irvine

7/20 10-11AM: **Herbs for the Summer Garden**

Dana Point Library
33841 Niguel Road, Dana Point

Thursdays 8:30-9:30 88.9FM KUCI
"In the Garden" radio show

7/3 **Eat Your Beans Day**

7/7 **Build a Scarecrow Day**

7/8 **Blueberry Day**

7/16 **Fresh Spinach Day**

7/27 **Take Your Houseplants for a Walk Day**

Venue: Centennial Farm on the OC Fair Grounds

By Debra Koskoff, UCCE Master Gardener of Orange County and Centennial Farm Docent

Last year, I was surprised to hear guests say they had come to the OC FAIR every year and had never made it over to Centennial farm. Many had no idea there was more to the Centennial farm than baby pigs and goats. After you see the animals, make your way to the gardens and learn where our food comes from and how it is grown.

If you love gardening, this is the perfect year to swing by the Centennial Farm gardens. Master



Gardeners will provide tours of the Centennial Farms gardens. They will also be available at a booth to answer questions about garden pests, irrigation, container gardening and more. Stop by the silo building to learn more about apiculture with the Master Gardener Bee team.

AUGUST

S	M	T	W	T	F	S
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18	19	20	21	22	23	24
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8/1 10-11AM: **Growing Beautiful Succulents**

MV Murray Center
24932 Veteran's Way, Mission Viejo

8/3 10-11AM: **Garden Workshop- Cool Season Veggies**

Farm + Food Lab at OC Great Park
14280 Cadence, Irvine

8/4 11AM-Noon: **Create a Wildlife Habitat**

Anaheim Packing District
440 S Anaheim Blvd, Anaheim

8/3 **Watermelon Day**

8/4-10 **Farmer's Market Week**

8/8 3:30-4:30PM: **Fairy Gardens**
City of Costa Mesa Community Garden
170 Del Mar Ave, Costa Mesa

8/8 **Sneak Some Zucchini onto Your Neighbor's Porch Day**

8/10 9-10AM: **Tool Time**

Reata Park
28632 Ortega Highway, San Juan Capistrano

8/17 **Honeybee Day**

Edited by Christine Kenney

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