



University of California

Agriculture and Natural Resources | UCCE Master Gardener Program

In this Issue

Bees—First in a Series	1/2
Caring for Citrus	3
Pruning Basics	5
Predator and the Pest	6
Out and About With MGs	7
Winter Gardening Tips	8
Calendar	10



This newsletter is provided by the UCCE Master Gardener Program of Orange County. We are UC trained Master Gardener volunteers ready to answer your gardening questions. Master Gardeners extend research-based information to the public about home horticulture and pest management through classes, hotlines, community events and demonstration gardens. Whether you want to know what to plant when, how to manage a pest, or how to become a master gardener, you can find it by visiting our website at <http://mgorange.ucanr.edu>

BACKYARD BEEKEEPING

By Karine Pouliquen, Beekeeper, Educator & UCCE Master Gardener

As a gardener you see first hand the value of pollinators like bats, hummingbirds, butterflies, native bees and of course honey bees in your own garden. You are aware of their essential free service in producing seeds, fruits and vegetables. Hence keeping a honey bee colony or two in your backyard not only will improve the overall production and health of your flowers, fruits and vegetables, but it will reward you with a deep connection with nature as well as giving you your own sweet honey.

Beekeeping is a fun, fascinating and rewarding hobby. However before starting your new adventure you will have to do a little bit of research. Few communities in Orange County welcome honey bees in their town or city; some have local ordinances that prohibit beekeeping, or restrict the number of hives one can have on their property. Make sure to check with your local town/city hall.

You cannot have bees where you live? Do not despair. There are locations around you where bees are allowed, and welcomed. Ask family members, friends, local farmers or community gardens if you could place a couple of beehives on their land. I always had good luck with this strategy. Make sure to let them know that YOU will be doing all the work, and that THEY will benefit from pollination, and maybe a bit of honey, too!

Keeping bees today is not as simple as it was 10-15 years ago. There are a lot of challenges, yet there are many ways to stay informed and learn the proper way to keep honey bees happy and healthy.

The best way to start is to take a beekeeping class in order to have a good understanding of the joy and the requirements that your newly discovered hobby will bring you.

Reading books and pertinent magazines about the subject will help you learn your new craft. I can recommend: "Beekeeping for Dummies" 3rd Edition by Howland Blackiston and "First Lesson in Beekeeping" by Keith Deplane.

Having a mentor is also very important. Mentors are happy to share their knowledge with others; they will let you watch while they work their own hives. They will show you the best beekeeping techniques for your climate and weather. It is beneficial to find someone nearby to consult. Most local beekeeping groups have mentors available to help. Make sure to contact them.



Beehive with smoker

Photo: Pouliquen

Continued from Page 1

Next, the location/placement of your hives is an important consideration. Hives need to be easily accessible because when harvest time comes, no one wants to walk uphill carrying hundreds pounds of honey

The ground should be firm and dry so your hive can be leveled without sinking. At one point, the hive will be really heavy.



A water source is recommended. Any shallow dish filled with water, pebbles or pieces of sticks so bees can stand and drink water without drowning will suffice.



Nice water cooler for honey bees! Photo: Superbeerescue.nwagle.com

Building a Hive

Beekeeping “season” starts in early spring in the United States. This is the time when bee breeders have packages of honey bees to sell. However, you will absolutely need to reserve/order your

bees in January or early February. After that period, no more bees are available to purchase.

Then, you will need to build and paint the equipment needed to keep your bees!

Following are the components that you will need: hive stand, bottom board with entrance reducer, a couple of deep hive bodies (brood nest), queen excluder, a couple of honey supers, and inner cover and a top cover.

Make sure that you have everything assembled, and set up before your bees arrive in April or May. Purchase from reputable bee-keeping local or online.

**** Always avoid buying used equipment. It is smarter and safer to purchase new materials and equipment from reputable dealers. ****

Starting with two hives is a good idea, because you can compare the hives to each other, and quickly resolve some problems that could arise. I will talk about that in next quarter’s issue.

The time you are willing to invest in keeping bees is up to you, but usually visiting your colonies once a week, checking on the overall health of the colony, making sure the queen is laying eggs, and looking for diseases, mites and other possible troubles are of utmost importance.

You also have to consider your physical strength, or have a helper! Honey filled supers weigh more than 50 lb. This could be managed using 8-frames equipment instead of the standard 10-frames.

Cost is another important element. The initial investment consists of:

- Woodenware - hive boxes
- Basic tools required: Smoker and hive tool
- Clothing recommended: Bee-suit and gloves
- Clothing required: Veil and hat

The total for two hives with bees will cost between \$800-\$1000 depending on quality, taxes and shipping.

Once the initial investment is made, a well-maintained hive can last 30 years. Of course there will be the annual cost for new queens, medications, foundations and feed, but this cost is relatively small.

CARING FOR CITRUS

Planting

Planting citrus properly is critical for the success of citrus in the home garden. Containerized citrus can be planted almost any time of year. The best time is after the last frost in spring.

Trees should be planted at the same depth as they were in the container. If planted too deep, soil and water tend to stand against the trunk, which promotes root and crown rots such as Phytophthora or oak root fungus. If planted too high, the roots will dry out too quickly.

Dig the planting hole, so that the root ball sits about one inch above the soil line. The width of the hole should be about twice the diameter of the root ball. Make sure the bottom of the planting hole is firm to prevent the root ball from sinking. Cleanly remove broken or decayed roots. Backfill the planting hole with native soil and water in thoroughly after planting. Construct a watering basin that is about a foot away from the trunk of the tree. Keep the trunk dry as much as possible while irrigating.



Tree planted too high resulting in dry roots.

Site selection

Most citrus are adapted to warmer, tropical or subtropical climates. Choose a site with well-drained soil that receives full sun most of the day and is protected from strong winds. Do not plant citrus in a lawn or with other plants that require frequent irrigation.

Depending upon the variety, citrus trees are generally damaged at temperatures below about 24° F and fruit, depending upon the stage of ripening, can be damaged at temperatures below 26° F. Cold-temperature sensitivity depends on many factors such as

how long it stays cold, the weather prior to the cold, the position or exposure of the tree, the variety, and fruit maturity.

Some citrus also need warm summer climates for the fruit to ripen properly. If the location is too cool, the fruit quality will be poor with little sugar production in the fruit. In cooler summer areas it may take months longer for the fruit to reach an adequate sugar percentage to be harvestable. In a cool summer area, try to plant on the south side of a dark wall to increase the heat units and improve fruit quality.



Damaged leaves due to cold temperatures

Training, pruning, and thinning

Young citrus will not require extensive pruning. They will, however, often produce very vigorous shoots that give the tree a wild appearance. These shoots may be pruned back a bit to give a more refined appearance. Be sure to prune off any suckers that arise below the graft or bud union.

Fruit thinning is not usually required. After petal fall, the young fruit undergo rapid cell division. It is not uncommon for many small pea-sized fruit to drop about one month after bloom. Later in spring and early summer, larger golf ball-size fruit may drop if conditions that limit growth such as excess heat, lack of soil moisture, or adverse weather exist.

For a large fruiting area, citrus should be trained to be a full skirted tree with the foliage canopy extending almost to the soil line. Citrus can also be grown as a sheared hedge or informal espalier. Pruning is not required to keep citrus productive or attractive. You can, however, prune the branches up higher to make it easier to get under the tree. Try to keep the center somewhat open by removing crossing branches.

Continued from Page 3

If you do prune, the ideal time is just prior to bloom or just after fruit set so that the tree can adjust its fruit load during the June drop. Minor pruning can be done at any time, but avoid late-season pruning, which can stimulate excessive tender growth that is likely to be injured by frost. Protect any exposed branches after pruning from sunburn by painting with a 50:50 white interior latex paint and water mixture.



(Top) Before bloom

(Lower) After fruit set

Harvesting and storing

Fruit should be harvested when it has developed full color and, most importantly, full flavor. Some varieties, such as Valencia oranges, may be greenish in appearance but still fully ripe. Citrus turn color in fall when they are exposed to cold temperatures, but this does not affect the fruit sweetness. Navel oranges may not be ready to harvest until the late winter, and Valencia oranges are usually mature in the summer.

The best place to store the fruit is on the tree. Once you pick the fruit, it does not increase in sweetness or ripen more fully. However, if you do pick the fruit, it will keep for about 4 to 6 weeks under refrigeration. Juice from lemons, limes, and Valencia oranges can be frozen for up to four months.

Fertilizing

Citrus occasionally suffers from micronutrient deficiencies such as zinc or iron. These deficiencies can be corrected by applying a foliar application of a liquid chelated micronutrient solution as the new growth emerges in the spring. You can also apply micronutrients in the sulfated form, such as zinc sulfate or iron sulfate, to the soil.

Most mature citrus require regular fertilization with nitrogen. Typically, most other nutrients are available in sufficient amounts in the soil. Nitrogen should be applied in January or February just prior to bloom. The second application then can be applied in May and perhaps a third in June. Avoid late-season fertilization as it may affect fruit quality, delay fruit coloring, and make the rind rough. Dwarf plants or trees in containers with restricted root space may require less fertilizer.

Maintaining a good fertilizing program can help preserve a tree's natural resistance to fungal diseases such as oak root fungus. Be careful not to overfertilize as this will cause excessive new growth, which makes trees susceptible to other disorders such as bacterial blast.

Which Variety to Plant

If you are new to growing citrus, you may want to stick to varieties considered to be “tried and true” – typically, commercial types that have been grown for decades because consumers love them and because they are generally easy to grow. But if you have grown citrus before, you may be in the market for “something new.” Here is an example of each for seedless oranges:

Tried & True: ‘Washington’ navel orange:

Brought into California in 1873, this seedless, easy-to-peel, delicious orange is still the gold standard. This and other midseason navel orange cultivars are often labeled as “midseason ‘Washington’ navel.”

Something New: ‘Cara Cara’ navel orange:

Discovered in Venezuela as a bud sport of a ‘Washington’ navel orange tree in 1976, ‘Cara Cara’ fruit are seedless and because of a lycopene mutation they have beautiful pink flesh.

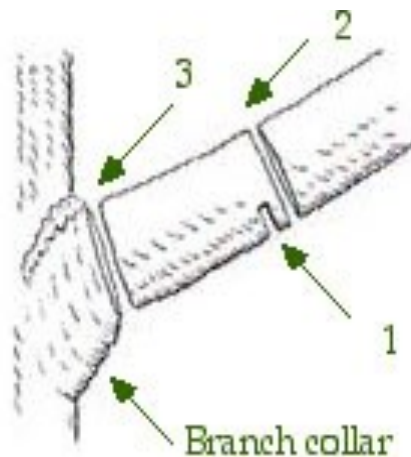
For more Tried and True versus Something New citrus varieties, visit <http://anrcatalog.ucanr.edu/Details.aspx?itemNo=8472> (copy and past this URL into your browser).

Pruning Basics

Prune trees when they are young to minimize structural problems and to minimize the need to remove large limbs later, which could result in large wounds that can provide entry sites for decay and disease organisms. Remove branches that cross, are attached to the trunk at a sharp angle, or that compete with the main leader. Remove diseased limbs and consider pruning out pests confined to a small portion of the plant. Pruning can help increase air circulation, which reduces the incidence of certain diseases. Do not overprune so as not to cause unnecessary wounds or promote sunburn.

Heading and thinning are the two primary types of pruning cuts; heading removes a branch to a stub, a bud, or a small branch; a thinning cut removes a branch at its point of attachment. Heading cuts stimulate new growth from buds just below the cut. The resulting foliage and shoots are often dense. Thinning cuts promote more evenly distributed growth throughout the plant and are stronger and retain more of the plant's natural shape. Avoid topping trees, which is the drastic heading of large branches in mature trees. Topping encourages the growth of branches weakly attached below the cut, which become susceptible to wind breakage.

Remove branch by cutting outside the branch collar



If cutting a large limb, make three cuts in the order indicated

Suggested application rates of nitrogen for Citrus

(Divide into 2 or 3 applications)

- **1st year:** 1 tablespoon nitrogen fertilizer 3 times per year, per tree.
- **2nd year:** 0.25 lb actual nitrogen per tree
- **3rd year:** 0.5 lb actual nitrogen per tree
- **4th year:** 0.75 lb actual nitrogen per tree
- **5th year:** 1 lb actual nitrogen each year



Zinc deficiency

1 pound of actual nitrogen equals about 5 lb of ammonium sulfate per year, or 100 lb of composted cow manure each year. Organic fertilizers such as manure, bloodmeal, etc. could be applied in the fall under the tree canopy.

THE PREDATOR AND THE PEST

By Kathy Keatley Garvey

So here's this praying mantis perched on top of a prickly pear cactus. It's early morning and she's hungry.



*Breakfast! A hungry praying mantis eyes a cabbage white butterfly.
(Photo by author)*

A cabbage white butterfly, looking like a white-gowned princess in a medieval palace, flutters by and pauses on the prickly pear to seek some sunshine.

Oops! Fatal mistake. When you're seeking sun, do not do that in front of a predator. Breakfast? Yes, that's what happened.

Before you feel sorry for the cabbage white butterfly, consider this: farmers who grow cole crops, such as cabbage, cauliflower and broccoli, would probably let out a shout of approval. That's because the cabbage white is considered a major pest of commercial cole crops. The butterfly lays her eggs--which are pale yellow to orange--in cole crops. The larvae, known as "green worms" or "green caterpillars," can cause major economic losses.

The cabbageworms have voracious appetites. They chew "large, irregular holes in leaves, born into heads, and drop greenish brown fecal pellets onto edible portions of the leaf," according to the UC Statewide Integrated Pest Management Program's Pest Management Guidelines on "Imported Cabbageworm" (*Pieris rapae*).

In home gardens, the cabbage white is considered a minor pest, although gardeners aren't fond of cutting open a broccoli head only to see that cabbageworms got there first.

At UC Davis, the common cabbage white butterfly assumes a more scientific role. Butterfly guru Art Shapiro, distinguished professor of evolution and ecology, hosts an annual "Butterfly for a Beer" contest. The first person in the three-county area of Sacramento, Yolo and Solano who brings in the first cabbage white of the year wins a pitcher of beer.

It's all in the interest of science. Shapiro, who does long-term studies of butterfly life cycles and climate, says the cabbage white is "typically one of the first butterflies to emerge in late winter. "Since 1972, the first flight has varied from Jan. 1 to Feb. 22, averaging about Jan. 20."

The 2016 winner was UC Davis graduate student Jacob Montgomery, who caught the cabbage white outside his home in West Davis. Shapiro, who has monitored the Central California population of butterflies for more than four decades, says the cabbage white is now emerging a week or so earlier on average than it did 30 years ago here.

As for the praying mantis, the cabbage white butterfly was just...breakfast.



Praying Mantis

OUT AND ABOUT WITH MASTER GARDENERS

Speakers Bureau

One of the most popular avenues of extending research-based, scientifically accurate information to the gardening public about home horticulture and pest management is through the Master Gardeners Speakers Bureau. The Speakers Bureau is a group of about 60 Master Gardeners



who present seminars, lectures and workshops to a variety of organizations throughout Orange County. These Master Gardeners come from varied backgrounds, but all share a common desire to educate the public through gardening talks.

Typical audiences include garden clubs, water districts, hospitals, cities and even private homes. The speakers travel to the group and tailor the presentation to their



needs, anything from a computer generated, projected lecture to an outdoor garden talk. On average, the Speakers Bureau is giving about 150 presentations a year.

Presentation topics range from integrated pest management (IPM) to water management to drought tolerant gardening and much more. There are a host of individual topics plus three series:

- Smart Gardening Series (six seminars)
- Composting Series (two seminars)
- Vegetable Series (seven seminars)



Interested groups can visit our website for a complete catalog of topics offered plus information on requesting a speaker at: http://mgorange.ucanr.edu/Projects/Speakers_Bureau (Copy and past this URL into your browser.)

WINTER GARDENING TIPS

Prune When No Leaves Left

Prune deciduous fruit trees and vines later this season, but only when all of their leaves have fallen. This indicates that the plants are fully dormant, and pruning will not damage living tissue. Don't clip spring blooming shrubs, however, or you'll remove the coming year's color. Wait till bloom is over to trim them. Also wait to prune outdoor fuchsias until they leaf out and you can see just what frost damage occurred.

Clean up Garden Debris

Clean up all garden debris. Leaving it in the garden provides safe havens for overwintering pests. Compost debris, but be sure to toss any diseased material -- don't add it to the compost pile. Periodically rough up soil surfaces to bring any overwintering insects and their egg cases to the surface where they'll die of exposure.



Plant Bareroot Fruit and Nut Trees, But Not Citrus

Buy trees that have well-developed fibrous root systems, a single well-shaped leader, and no serious bark injury. Avoid trees with circling or tangled roots. Branches should be smaller than the trunk and growing from it at angles greater than 45 degrees.



Plant Camellias and Azaleas

Camellias and azaleas are some of the few plants that are dormant while in bloom so transplanting should not have any effect on their buds. Be sure to keep the ground clean around all your shrubs and perennials that are prone to fungal diseases, especially camellias. Rain can turn the buds and blooms brown around the edges of camellias so it makes sense to pick them all off after it rains so their energy goes into the unblemished blossoms. This is also a good reason not to plant them near overhead sprinklers.

Rose Pruning Workshop

Saturday, January 28, 2017 – 9:00 am – 12:00 noon



LOCATION: Heritage Museum of Orange County 3101 W. Harvard, Santa Ana, CA

- Lecture by Teena Spindler, UCCE Master Gardener, rose expert and gardener extraordinaire
- Hands-on pruning practice (bring your pruners)
- Tool sharpening by Orange County Blacksmiths
- limit 2 garden tools no scissors

Other exhibitors include:

- Orange County Herb Society
- Orange County Blacksmith Guild
- Victorian Tea Society
- Kellogg Garden Products



University of California

Agriculture and Natural Resources

UCCE Master Gardener Program

The University of California prohibits discrimination or harassment of any person in any of its programs or activities. (Complete nondiscrimination policy statement can be found at <http://ucanr.org/sites/anrstaff/files/107734.doc>)
Inquiries regarding the University's equal employment opportunity policies may be directed to John Sims, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, 2801 2nd Street, Davis, CA 95618, (530) 750-1397.

CALENDAR

Grow It Now – Spring Flowers Osher Lifelong Learning Institute

Dec 1st 1:00 p.m. - 2:30 p.m.
*Ruby Gerontology Center, 800 N. State
 College Blvd, Fullerton 92831*
Cal State Fullerton

Reata Park Series

9:30 a.m. - 11:00 a.m.

Reata Parks and Events Center

- Smart Gardening 101, Jan. 14th
- Bareroot, Jan. 28th
- Raised Bed Gardening, Feb. 11th
- Create a Butterfly Garden, Feb. 25th
- Terrific Tomato Tips, March 11th

Smart Gardening classes with UCCE Master Gardeners and Master Food Preservers and Goin Native. Classes are free and held at:

Reata Park and Events Center
28632 Ortega Hwy
San Capistrano, CA 92675

For more info and RSVP, contact
 Marianne@goinnative.net or
 (949) 606-6386

Rose Pruning

Jan 28th 9:00 a.m. - Noon
*Heritage Museum of Orange County,
 3101 W. Harvard, Santa Ana*

- Lecture by Teena Spindler, UC-CE Master Gardener, Rose Expert
- Hands-on pruning practice
- Tool sharpening by Orange County Blacksmiths
- Various Exhibitors


Yorba Linda Public Library— Garden Series

7:00 p.m. - 8:30 p.m.



- Roses 101, Feb. 22nd
- All About Herbs, March 9th

*Yorba Linda Public Library, 18181 E.
 Imperial Hwy, Yorba Linda, CA*


December 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 	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	31

January 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	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	31				

February 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	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				

“If you look the right way, you can see that the whole world is a garden.”

– Frances Hodgson Burnett, *The Secret Garden*

The University of California prohibits discrimination against or harassment of any person in any of its programs or activities (Complete nondiscrimination policy statement can be found at: (<http://ucanr.edu/sites/anrstaff/files/107734.doc>)).

Inquiries regarding the University’s equal employment opportunity policies may be directed to John Sims, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, 2801 2nd Street, Davis, CA 95618, 530.750.1397.