University of California
Agriculture and Natural Resources

UCCE Master Gardener Program
Colusa County

# A Garden Runs Through It

April 2021

*Whether it's a vegetable garden, houseplants or a landscape...*

**UCCE Master Gardener Program, Colusa County**

**County Director, Franz Niederholzer**


UC Cooperative Extension,
Colusa County

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## In This Issue



Click here to read our blog.

Find us on Facebook

## Upcoming events

**April**

**STEAM kits for Kids!**
Herbal Sachet
Available at our office
100 Sunrise Blvd., Ste. E
Colusa

Kits will be available at the first of every month.

If you join our Facebook page you will see educational videos in place of in person workshops.

**April**

**Tomato workshop**
Friday April 9, 10 am
Education Village
499 Marguerite, Williams

**Family Fair**
April 17

**Virginia Read Community Day**
April 24

## *Advice to Grow by … Ask Us!*

UC MASTER GARDENER PROGRAM
OF COLUSA COUNTY

# TOMATO PLANTING & CARE DEMONSTRATION

## Friday, April 9 at 10am

**Farm to School Community Garden**
**Education Village**
**499 Margurite St. in Williams, CA**

PLEASE JOIN US!
THE UC MASTER GARDENER PROGRAM OF COLUSA COUNTY WILL DEMONSTRATE HOW TO PLANT, FEED, AND WATER 8 DIFFERENT KINDS OF TOMATOES.

PROGRAMA DE JARDINEROS MAESTROS
DE LA UC DEL CONDADO DE COLUSA

# DEMOSTRACIÓN DE PLANTACIÓN Y CUIDADO DE TOMATES

## Viernes 9 de abril a las 10 a.m.

**Huerto comunitario del Programa de "Farm to School"**
**Education Village**
**499 Margurite St. en Williams, CA**

**POR FAVOR ÚNETE A NOSOTROS!**
**EL PROGRAMA DE JARDINEROS MAESTROS DE LA UC DEL CONDADO DE COLUSA DEMOSTRARÁ CÓMO PLANTAR, ALIMENTAR Y REGAR 8 TIPOS DIFERENTES DE PLANTAS.**

## Ornamental Plant of the Month

### De La Mina Verbena

This hardy subshrub loves the heat of our valley. In recent years the Lilac verbena has become widely recognized for being a premier butterfly attracting. Part of this is due to its long flowering cycle from spring into summer. Native to Cedros Island off Baja California, it grows into a loosely mounding perennial, 2-3 ft. tall and 2-3 ft. wide, occasionally wider.

The flowers are small but plentiful which makes it the better as an attractant for pollinators in your garden.

Its heaviest flowering period is in the spring but with supplemental water and deadheading it will produce flowers on and off all years. It does want adequate drainage but has low water requirements once established. Shear it back to shape and renew after flowering.

**Plant Type:** Perennial, Native
**Foliage Character:** Evergreen
**Habit:** Mounding
**Growth Rate:** Fast
**Height:** 2 ft. - 3 ft.
**Width:** 2 ft. - 4 ft.

Submitted by Cynthia White

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### THIS EPISODE:

**Camellias, Soil, & Pruning - 03.26.2021**
UC Master Gardeners of Colusa County, Gerry Hernandez, and Donna Critchfield discuss soil tips, garden maintenance and pruning, and camellias in a spring garden.

### PREVIOUS EPISODES:

**Spring Garden Hints - 02.27.2021**
UC Master Gardener's of Colusa County, Gerry Hernandez, and John and Diane Vafis discuss hints, tips, and tasks you should be doing for a successful spring garden.

**Butterflies & Milkweed - 01.29.2021**
UC Master Gardener of Colusa County, Gerry Hernandez, and Lora Haller, visitors services specialist at the Sacramento National Wildlife Refuge Complex in Willows discuss Monarch Butterflies and the Milk Weed plant.

*"A Garden Runs Through It" podcast is produced in partnership with:*

Pioneer Review | Radio colusa.com | University of California Agriculture and Natural Resources | UCCE Master Gardener Program Colusa County

## Edible Plant of the Month

# We all need friends.

Companion planting is the practice of growing different plants together. Certain pairings will increase productivity in our gardens. Why? You may ask. Think of it like people, and friendships. We all have those friends who bring us up to our feet when we are down, or protect us from bad sorts, and some friends make us shine, sometimes or we need a little propping up? The same can be said of gardens. Some of the benefits to companion planting are deterring pests, attracting beneficials (think of it like closing time), shade regulation, natural supports (like too much vino before closing time), and improved plant health by changing the biochemistry of the soil for nearby plants, improving soil fertility, and weed suppression.

We must also look out for foes in our garden. For example, black walnut trees secrete growth inhibitors through their roots, or you may have a few plants competing one another because the roots are on a similar soil level.

Many plants however are excellent natural insect repellents. Nasturtiums for example, are so favored by aphids that the devastating insects will flock to them instead of other plants (HEY!, look at me sweetheart!). Flowers can attract beneficial insects; growing calendula or cosmos nearby will attract tiny parasitizing wasps to aphid hungry hoverflies. Dill attracts ladybugs, which eat garden pests like aphids and spider mites. Basil pairs well with tomatoes, repelling whiteflies, mosquitoes, and spider mites. Parsley also draws insects away from tomatoes, so plant these herbs between your tomatoes. Borage pairs well with tomatoes, attracting pollinating bees and tiny pest-eating wasps. Mint deters aphids, ants, and flea beetles. Just be careful to plant mint in its own pot or bed because it can get away from you and run amuck (HELP! I am being sminted on!) in your garden. Garlic and garlic spray deters aphids, and Japanese beetles (I know what it does for my breath). Tansy discourages cutworms which can attack asparagus, bean, cabbage, carrot, celery, corn, lettuce, pea, pepper, potato, and tomato plants. Tansy too needs to be planted in pots to avoid becoming an invasive plant to your garden. Nasturtiums attract caterpillars away from cabbage, broccoli, cauliflower, kale, and black flies from fava beans.

…and then as we all know, we occasionally need that friend who will guide us safely after weeks of friendly socializing and be there to prop us up in times of need. This is where plants like corn comes in to aid in keeping tomatoes upright. Cucumbers and beans will be looking for that hand up, climbing and along those lovely long stalks.

Yes, we all need a companion on occasion.

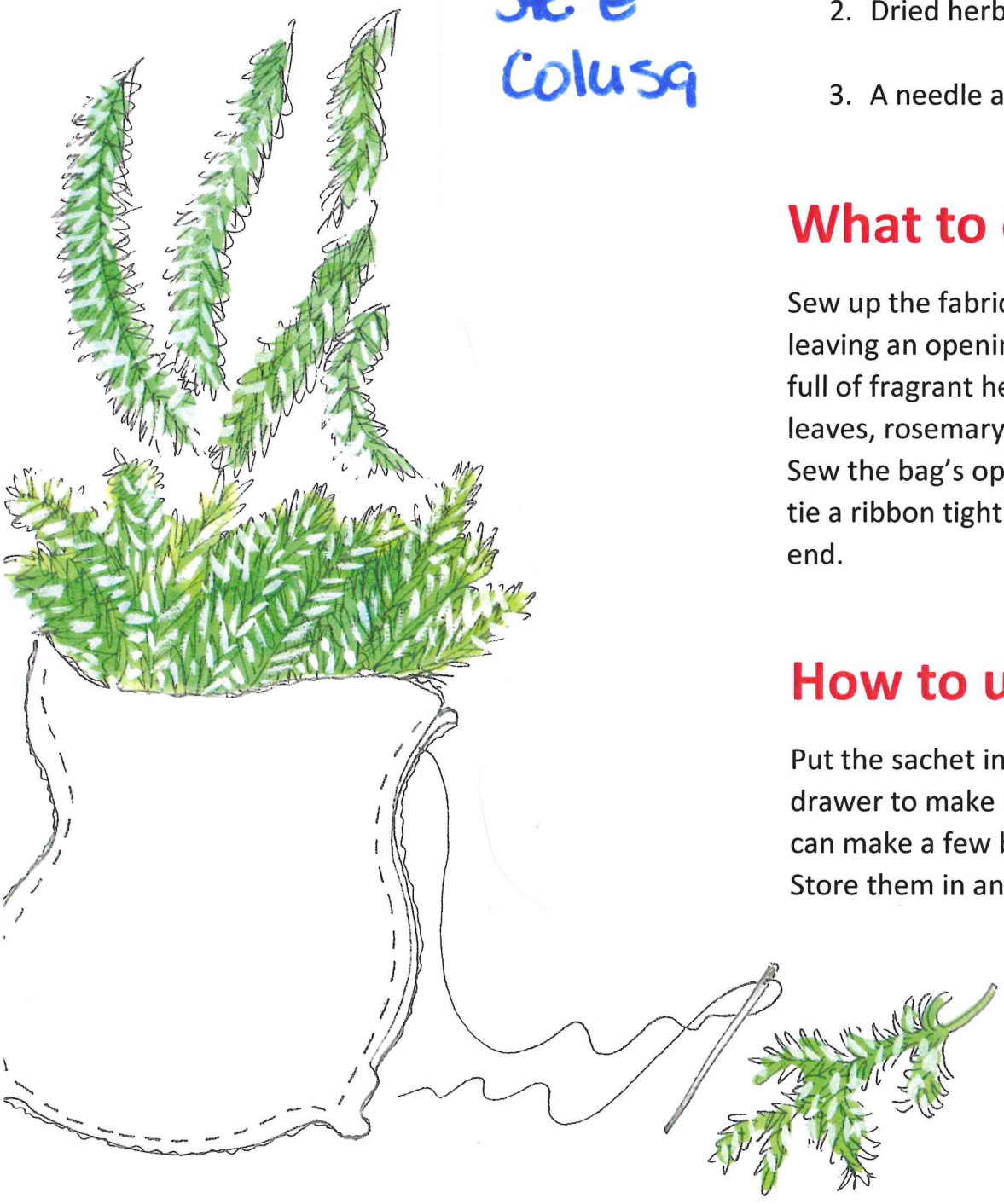
Submitted by Annelie Lauwerijssen

STEAM Kit

available @ 100 Sunrise St. E Colusa

## What you need

1. 4 x 8 inch piece of clean cotton or linen fabric.
2. Dried herbs
3. A needle and thread



## What to do

Sew up the fabric like a pillowcase, leaving an opening on one side. Fill full of fragrant herbs, such as mint leaves, rosemary, sage, or thyme. Sew the bag's open end closed or tie a ribbon tightly around the open end.

## How to use

Put the sachet into your sock drawer to make it smell nice. You can make a few bags at a time. Store them in an airtight container.

# Herbal Sachet

## Recipe of the Month

# Sweet Potato Empanadas

2 cups cooked sweet potatoes, cooled and mashed
1/4 cup cream cheese or sour cream or Greek yogurt
1/4-1/2 cup sliced green onions, about 1/4" thick
2 tablespoons maple syrup or brown sugar
1 tablespoons hot sauce of your choice (see below)
1 - 2 tablespoons minced parsley or cilantro
1/2 teaspoon salt
1/4 cup chopped toasted nuts - optional
1 egg, beaten
1 package frozen puff pastry, thawed in the fridge

I prefer the red skinned sweet potatoes, roasted in the oven until soft. This is an interesting way to use up leftover sweet potatoes, too.
Mix all the ingredients except the egg together.
Taste the mixture to decide if you want more hot sauce and/or sugar. I like chipotle peppers in adobo and chop up some of the pepper, too. If you don't have hot sauce, you could use some chili powder, a little cumin and coriander. Once you have the seasonings to your taste, mix in the egg.
Lay out one sheet of puff pastry and roll it to smooth out the fold lines. You may need to dust it with a little flour so it does not stick to the counter.
Cut it into 9 equal squares.
Fill each square with a rounded tablespoon of the mixture.
You want them full, but not oozing out as you try to seal them.
Moisten the edges of the square with your fingertip dipped in some water or milk. Fold over to make a triangle, it's OK to stretch the dough a little, and seal with a fork. Pierce the top with the tip of a sharp knife making 2 slits to release steam.
Place on a parchment lined baking sheet.
Repeat, using the second sheet of pastry, until all filling is used.
Bake in a 400 degree oven for 20-25 minutes until golden brown.
Serve warm or at room temperature with spicy mayonnaise or ranch-type dressing to dip.

NOTE: If you want little party bites, cut each pastry sheet into 16 squares. You would probably only use 1 teaspoon of filling and bake them 15-20 min. You can make these in advance, hold them in the fridge, and bake them later.

**Spicy Mayonnaise**

1/2 cup mayonnaise of your choice (not Miracle Whip)
1 teaspoon (or more) siracha, or chili-garlic sauce, or Tabasco
1/2 teaspoon lime or lemon zest
1 tablespoon lime or lemon juice
salt
Stir all ingredients together and refrigerate until ready to serve with empanadas.

Submitted by Penny Walgenbach

## Book of the Month

### SUCCULENTS SIMPLIFIED

Growing, Designing, and Crafting with 100 Easy-Care Varieties

Author: Debra Lee Baldwin, Author of Designing with Succulents and Succulent container plants.

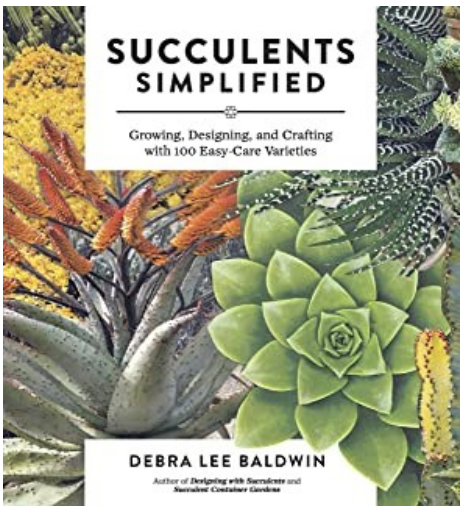
Did you know that all Euphorbia are not succulents?

Poinsettias are actually part of this immense class of plants. Euphorbia are toxic. They should never be planted where pets or children play. The milky sap is caustic and extremely irritating to the eyes. If any of the sap touches your skin when working around the plant, you need to wash the area thoroughly with soap and water. This is only one of many bits of useful information found in this book.

Did you also know that in addition to Thankgiving and Christmas Cactus there are also Spring and Easter Cactus? However, the spring bloomers are Hatiora and the winter blooming are a hybrid of the Schlumbergera genus. They are often mistaken as the same plant because their leaves (which are flattened stems) are similar. The blooms, however differ in shape and color, and they originated in Brazil.

The book is divided into three parts: Enjoying, growing and designing with succulents. Which includes total care including maintaining happy, healthy plants. Part two is a wealth of design ideas including ideas and instructions for growing a vertical garden, designing hanging baskets, low light dish gardens. Part three pictures and identifies 100 plants, including country of origin, specific needs and ideas for incorporating into the landscape or indoor containers, with more design ideas. A big plus for me is that the author included correct pronunciation of the plant genus with each description.

Definitely a recommended read and an excellent resource to keep.




Submitted by Donna Critchfield

# Seasonal IPM Checklist

The list below reflects possible landscape activities to do during the selected month(s) in your region. You can use the checklist as a guide for IPM activities in your own landscape or provide it to your clients.

| | April |
|---|---|
| ☐ | Abiotic Disorders - Prevent or manage damage, such as that caused by aeration deficit, frost, hail, herbicides, wind, and too much or little water. |
| ☐ | American plum borer - Check for frass and gum on lower branch crotches and graft unions of young trees such as almond, mountain ash, olive, sycamore, and stone fruit. |
| ☐ | Anthracnose e.g., on ash and sycamore - Fungicides are generally not options for large trees other than ash. |
| ☐ | Ants - Manage around landscape and building foundations, such as using insecticide baits and trunk barriers. |
| ☐ | Aphids - On small plants, spray a strong stream of water or apply insecticidal oils and soaps. Look for and conserve natural enemies such as predaceous bugs, lacewings, lady beetles, and syrphids. |
| ☐ | Asian citrus psyllid - Look for it and if found where not known to occur report it and other new or exotic pests to your local county agricultural commissioner. |
| ☐ | Camellia, citrus, gardenia, grape and other plants adapted to acidic soil - If leaves are yellowing (chlorotic) between green veins, plants may benefit from foliar or soil application of iron and zinc chelate and mulching. |
| ☐ | Carpenter bees - Paint or varnish and seal wood in which they nest. If intolerable, treat tunnels during fall or early spring. |
| ☐ | Carpenterworm - Protect trees from injury and provide proper cultural care, especially appropriate irrigation. |
| ☐ | Cherry spotted wing drosophila - Harvest early, apply spinosad as soon as fruit begins to develop any pink color. |
| ☐ | Citrus - Monitor for damage and pests such as caterpillars, mites, scales, and thrips. |
| ☐ | Clearwing moths - Look for signs of boring in ash, birch, pine, poplar, and willow; less often in oak, sycamore, and stone fruits. |
| ☐ | Codling moth of apple and pear - Bag fruit. Promptly remove infested and dropped fruit. Apply insecticides only if precisely timed. |
| ☐ | Compost - Turn and keep it moist. Cover during rainy weather if needed to avoid sogginess. |
| ☐ | Deter borers in fruit and nut trees e.g., paint trunk and scaffolds with white interior latex paint diluted with an equal amount of water. |
| ☐ | Fertilize caneberries, citrus, deciduous fruit trees, palms, and heavily-flowering shrubs with slow-release product if not done in March. |
| ☐ | Fire blight - Look for oozing and dead limbs on pome plants such as apple, crabapple, pear, and pyracantha. If a problem in the past, apply blossom sprays to prevent new infections. |
| ☐ | Irrigation - Adjust watering schedules according to the weather and plants' changing need for water. Check systems for leaks and broken emitters and perform maintenance as needed. Consider upgrading the irrigation system to improve its water efficiency. |
| ☐ | Mosquitoes - Eliminate standing water e.g., in gutters, drain pipes, and flowerpots. Place *Bacillus thuringiensis* subspecies *israelensis* in birdbaths and ponds to selectively kill mosquito larvae. |

# Seasonal IPM Checklist

- [ ] Mulch - Apply organic mulch where thin or soil is bare beneath trees and shrubs.
- [ ] Olive knot and oleander gall, or knot - Avoid pruning olive and oleander during wet weather if stem galls are a problem.
- [ ] Olive pests e.g., ash borer, psyllid, and scales. Blossom drop sprays on nonharvested trees. Olive fruit fly suppression on harvested trees.
- [ ] Peach leaf curl - Apply preventive spray once or more during late fall through bud break if leaf curl has been a problem on nectarine or peach.
- [ ] Plant frost-tender species e.g., avocado, bougainvillea, citrus, and hibiscus. Water regularly to keep root zone moist, but not soggy.
- [ ] Powdery mildew - Check for signs of disease on apple, crape myrtle, grape, rose, and stone fruits.
- [ ] Prune pine terminals only during candling (new shoot growth), late spring to early summer, to retard growth and in young pines direct growth.
- [ ] Prune winter-flowering shrubs e.g., camellia before next year's flower buds form.
- [ ] Root rot - Favored by excessive water and poor drainage. Avoid overirrigation and waterlogged soil.
- [ ] Rose pests - Manage or take preventive actions, such as for aphids, black spot, Botrytis blight, downy mildew, hoplia beetle, powdery mildew, thrips, and rust.
- [ ] Scab of apple, crabapple, and pear - Avoid sprinkler wetting of leaves. Compost or dispose of dropped leaves. Grow resistant cultivars or apply preventive fungicides.
- [ ] Scale insects - If damage has been unacceptable, monitor the crawler stage and when abundant apply horticultural oil or another insecticide.
- [ ] Stone fruit pests - Monitor for pests such as aphids, borers, brown rot, caterpillars, powdery mildew, and scale insects.
- [ ] Weeds - Manage weeds using nonchemical methods such as cultivation, handweeding, or mowing.
- [ ] Yellowjackets - Place out and maintain lure traps or water traps.

# Gardening Guide

## UC Master Gardener Program of Colusa County

### Zones 8 and 9

| | April | May | June |
|---|---|---|---|
| ***PLANTING*** | • You can plant dahlia tubers and transplant most perennials.<br>• As temperatures warm (nights consistently over 55 degrees) you can transplant tomatoes, eggplants and peppers.<br>• You can still plant seeds of cilantro, radishes, beets and chard. (Cilantro will go to seed quickly as the weather warms up.) | • Direct seed in the garden cucumbers, melons, summer squash, beans, corn, and annual herbs.<br>• Plant sunflowers, zinnias, cosmos, marigolds and aster in the flower garden. | • In the flower garden you can still plant seeds of marigolds, zinnias, cosmos and sunflowers. You can set out transplants of perennials like yarrow, verbena, black-eyed Susan, and dahlias.<br>• In the vegetable garden you can plant seeds of pumpkins, squash, and corn. |
| ***MAINTENANCE*** | • Trim the dead flowers but not the leaves from spring bulbs. The leaves restore the bulb; so wait to remove them until they turn yellow. Fertilize the bulbs after the bloom is finished with bone meal.<br>• Fertilize shrubs and trees once this spring. | • Fertilize summer blooming flowers early in the month.<br>• Apply (or re-apply as needed) organic mulch to all beds to keep the soil cool and enrich the soil.<br>• Thin peaches, plums and nectarines so there is 6” between fruits. | • Be sure to water early in the day to conserve water and minimize plant disease. Regularly check your sprinklers and drip emitters for needed repairs and adjustments. Monitor soil moisture in hot weather to be sure you are irrigating enough. (Use a metal rod to push into the ground. If it goes in easily, the soil is moist.)<br>  |
| ***PREVENTION*** | • Apply organic mulch to all beds to keep the soil cool and enrich the soil.<br>  | • Continue the battle against slugs and snails.<br>• Deadhead (cut off spent flowers) to get continuing bloom on annuals and perennials. | • Before the full heat of summer arrives mulch your beds to control weeds and conserve moisture. |

# Fleas

**Fleas are annoying to people and pets, especially during spring and early summer when their numbers tend to increase dramatically.**

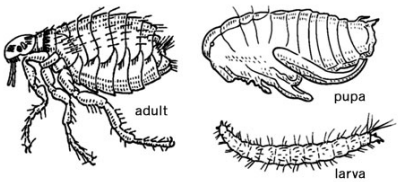
The common flea in California is the cat flea. Despite its name, this flea attacks both dogs and cats and will also bite humans. To keep fleas out of your home, control fleas on your pet and regularly clean pet sleeping areas.

**The adult flea feeds directly on animals.**

## On the pet

A number of very effective and safe products for flea control on the pet are available. You must supplement pet treatments with regular cleaning of your home and periodic combing with a pet flea comb to detect new infestations.

- Spot-on formulations are applied to the animal's coat. Use as directed on the label. These are available from veterinarians, over-the-counter, or online.
- Systemic flea control products, available from vets, are given as a pill or food treat.
- Flea collars containing imidacloprid and flumethrin are effective against fleas and ticks. Collars with insect growth regulators (IGRs) affect eggs and immature fleas. Be sure to choose collars containing methoprene or pyriproxyfen.
- Flea shampoos and soaps, powders and dusts, spray-on liquids, and dips are less effective and more hazardous to pets, people, and the environment than the three types of products above.




**Life stages of the flea, egg not shown.**

**For more information about managing pests, visit ipm.ucanr.edu or your local University of California Cooperative Extension office.**

## In the yard

Outdoor treatments are occasionally needed. If your pet regularly sleeps outside and flea numbers are high, these areas can be treated with a spray containing pyriproxyfen. If possible, open sleeping areas to sunlight by removing low hanging vegetation. Immature fleas are unlikely to survive in areas with exposure to sunlight.

Some wild animals can lead to outdoor flea problems as well, including feral cats, opossums, squirrels, and coyotes, so measures to limit their presence are important.

## Inside the home

Whether or not you are aware of fleas in your home, regularly vacuum and launder areas where your pet rests. If you have a major flea problem, treat your pet with one of the options above and follow the steps below.

- Locate heavily infested areas (usually areas where the pet rests) and concentrate treatment there.
- Wash throw rugs and pet bedding.
- Vacuum upholstered furniture, cleaning under cushions and in crevices.
- Vacuum carpets, especially beneath furniture.
- Use a hand sprayer or aerosol to treat all carpets and unwashable upholstered furniture with an insecticide that contains an IGR (methoprene or pyriproxyfen). This treatment kills larvae but not pupae, so fleas may continue to emerge for up to 2 weeks.

**Two cat flea pupae.**

- Over the next 2 weeks, vacuum regularly to remove adult fleas that emerge from pupae. Do not reapply pesticides.
- Seal vacuum bags and discard them so fleas don't escape.

## What you do in your home and landscape affects our water and health.

- Minimize the use of pesticides that pollute our waterways and harm human health.
- Use nonchemical alternatives or less toxic pesticide products whenever possible.
- Read product labels carefully and follow instructions on proper use, storage, and disposal.

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April 2019

#6

# ROTOTILLER SAFETY

***Information given here is intended for use by program representatives, master gardeners, and those they train.***

Data available from the Consumer Product Safety Commission indicate a total of about 2,000 people were treated in hospitals for rototiller injuries during 2006. Many of these injuries were lacerations to lower legs and hands followed by hand burns, back strains, and contusions to hands, knees, and wrists. The following safety note discusses walk-behind rototillers.

## Pre-Use Activities

- Thoroughly review and understand information provided in the rototiller operator's manual with particular attention given to descriptions of safety procedures.
- Before using, always inspect the rototiller for damage or disrepair and make sure all shields and guards are securely in place. In addition, assure all belts are properly tightened and do not have excessive wear or damage.
- If a rototiller fails the pre-use inspection, remove the rototiller from service.

## Operating Precautions

- Always wear safety glasses or goggles when using a rototiller. In addition, hearing protection should also be used since engine noise from a rototiller is at about 90 decibels.
- Wear long pants and sturdy shoes (i.e., no sneakers or sandals) when using a rototiller. Do not wear loose clothing.
- Always start a rototiller outside. Do not operate a rototiller inside an enclosed space (i.e., sheds or garages) where carbon monoxide exhaust gas can accumulate.
- Prior to starting, inspect the area to be tilled for large rocks or foreign objects that could damage the rototiller.
- Do not till above underground utility lines.
- Shift rototiller into neutral and disengage clutch before starting.
- Always operate a rototiller in conditions of good visibility and adequate light.
- Keep hands and feet away from rotating equipment.
- Do not overload rototiller engine capacity by tilling too deep or fast.
- Never fuel the rototiller when the engine/muffler is hot. Use a rag to wipe up fuel spills.
- Shut off the rototiller engine and disconnect the spark plug wire before performing mechanical adjustments, maintenance, or repairs or clearing/unclogging the tines.
- Always shut off a rototiller before leaving it unattended.

## Master Gardener activities!

In today's fast paced, social media way of life, fake news has become normal.
This includes fake gardening advice.
UC Master Gardeners use cutting edge, research-based information to help you garden better.
We are practical, connected and trusted.
*Advice to Grow By … Ask Us!*

Tomorrow's activities are created by today's dreamers—you can make sure that the UC Master Gardener Program of Colusa County is still working to help future generations through your support.

Click here to support us.

## Science Word of the Month

**June Drop—**The dropping of immature tree fruits during the early summer; believed to be caused most frequently by embryo abortion or an extremely large crop load.

If you attended one of your workshops, you will receive an email from mgevaluation@ucanr.edu. Your input gives us the tools we need to grow and improve our program. *Thank you!*

3. Amaryllis *(Hippeastrum puniceum)*

# Germination

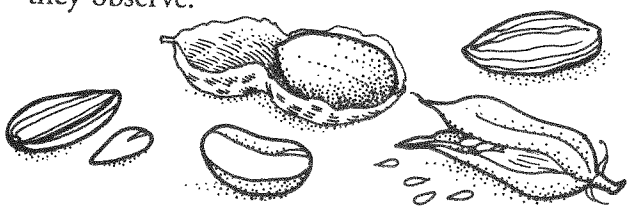
**Germination** starts when seeds becomes active below the ground and ends when the first leaves appear on the stem above the ground. The plant has then become a **seedling**. The seed itself is made up of the **seed coat**, **embryo** (young shoots, roots, and the **cotyledon** or cotyledons), and stored **nutrients** (either in the **endosperm** or **cotyledons**). When a seed leaves its parent plant, it goes through a period of dormancy when it becomes dehydrated. As conditions become favorable, the seed is activated and the first stages of germination begin.

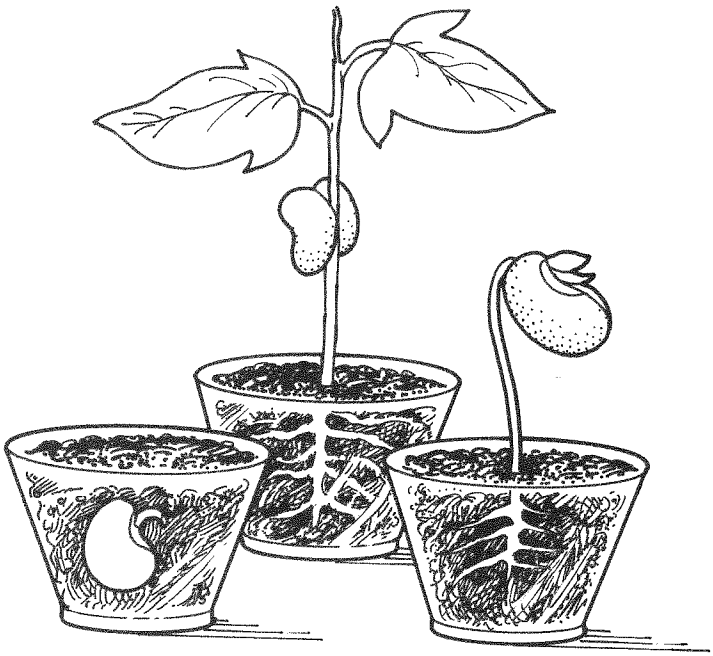
## What Is Inside a Seed?

(Technical Illustration)

Soak an entire bag of dried lima beans in water overnight to ensure that you will have enough beans for this activity and the experiment on pages 35-36.

- Give each student a soaked lima bean and a sheet of drawing paper.
- Direct students to remove the seed coat and carefully pull the two cotyledons apart to open the seed. Tell them to open seeds along the outside curve to avoid damaging the embryo.
- Have students identify, draw, and label the cotyledons, the tiny leaves (plumule), and roots (radicle) of the embryo.
- Bring in other seeds such as peanuts, almonds, or sunflower seeds for students to open, examine, and draw. Lead a discussion allowing students to compare their drawings. Students may then eat the peanuts or other edible seeds they observe.





## Bean Germination

(Experiment)

pages 35-36

Show your students the color photographs in *Bean and Plant* which illustrate the germination and growth of a bean plant. Do not read the text to them as it will interfere with their experiment. Have your students complete the experiment on pages 35-36. In this experiment they will formulate and test their hypotheses regarding plant germination.

Name:

Bean Germination
Experiment 3

EXPERIMENT 3

# Question: *How long will it take beans to germinate?*

**Hypothesis:** _____

_____

_____

## Procedure:

### Step 1

Fill each cup 2/3 full with soil.

### Step 2

Gently plant two lima beans near the outside of each cup to observe the beans as they grow.

Remember, germination begins when the seeds first become active underneath the soil and ends when the first leaves appear.

### Step 3

Water soil sparingly. Place the cups where they will get sunlight.

**Materials**

- ☐ clear plastic cups
- ☐ soil
- ☐ lima beans (soaked in water overnight)

### Step 4

Record your observations daily on a chart like this:

| Date | Observations |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

### Step 5

Draw what you saw during each stage of germination.

| primary roots emerging | hypocotyl (hook) emerging | cotyledons (seed leaves) emerging | plumule (first foliage leaves) emerging |
|---|---|---|---|
| | | | |

Name:

Bean Germination
Experiment 3

EXPERIMENT 3

## Results and Conclusions:

1. Was the germination rate the same for every bean seed? How do you account for this? _____

2. What factors might affect the germination rate of a seed? _____

3. Describe how your observations did or did not support your hypothesis. _____

4. Do you think other types of seeds would have similar or different germination rates? Why? _____

5. What new questions about plant germination might you explore?

**Science Challenge:** Set up an experiment to test this question:

**Do all seeds germinate in 14 days?**

Write your question, hypothesis, procedure, and materials list on another sheet of paper. Then test the hypothesis and record your conclusions.

**Garden Club of Colusa County activities**

April 26, 2021
St. Stephens Church
Colusa
6:30 pm

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## Additional Links

| | |
|---|---|
| Integrated Pest Management | ipm.ucanr.edu |
| UC Davis Arboretum | arboretum.ucdavis.edu |
| Invasive Plants | www.cal-ipc.org |
| Plant Right | www.plantright.org |
| Save Our Water | saveourwater.com |
| California Garden Web | cagardenweb.ucanr.edu |
| McConnell Arboretum and Botanical Gardens | turtlebay.org |
| UCANR Colusa County | cecolusa.ucanr.edu |
| UC Master Gardener Program (statewide) | mg.ucanr.edu |
| California Backyard Orchard | homeorchard.ucanr.edu |
| ANR publications | anrcatalog.ucanr.edu |