

## **Container Magic!**

Mary Wool and Donna Marshall





## Thank you for joining us today! A few particulars...

### Please feel free to ask questions as we go.



### PLEASE JOIN US FOR OUR **ANNUAL SPRING PLANT SALES**

**Edibles plant sale – Saturday, April 12** 

**Ornamental plant sale – Saturday, April 26** 

8 am until noon both days, rain or shine

**Sherwood Demonstration Garden** 6669 Campus Drive (behind Folsom Lake College El Dorado Center), Placerville

See plant inventory list at the Master Gardener website one week before each sale:

mgeldorado@ucanr.edu





What can be grown in containers?

You name it!



# **Container Selection Factors to Consider**

- Size
- Porosity
- Effects on soil temperature
- Weight and portability
- Cost
- Personal taste



#### **Container Selection**

#### **Terra Cotta**

- Porous breathes
- Lots of variety
- Cost
- Shows mineral stains
- Soil dries more quickly
- Relatively heavy/breakable



#### **Glazed Clay and Ceramic**

- Non-porous retains moisture
- Wide variety of color, size, style choices
- Decorative
- Heavy
- Cost



## Container Selection Plastic

- Porous breathes
- Some are relatively inexpensive

Wood

- Will rot providing some air space under the pot can help
- Consider more durable woods cedar, oak, redwood, teak



- Retains moisture
- Light weight
- Less insulation collects heat
- May crack and fade



## Container Selection Fiberglass Metal

- Non-porous
- Wide variety in size, style, color
- Durable
- Light weight
- Less thermal insulation
- More expensive



- Many styles
- Non-porous
- Conducts heat
- May rust over time



#### **Container Selection**

#### **Concrete**

- Porous
- Durable
- Good insulator
- Heavy
- Lime content issues
- Expensive



#### **Self Watering Containers**

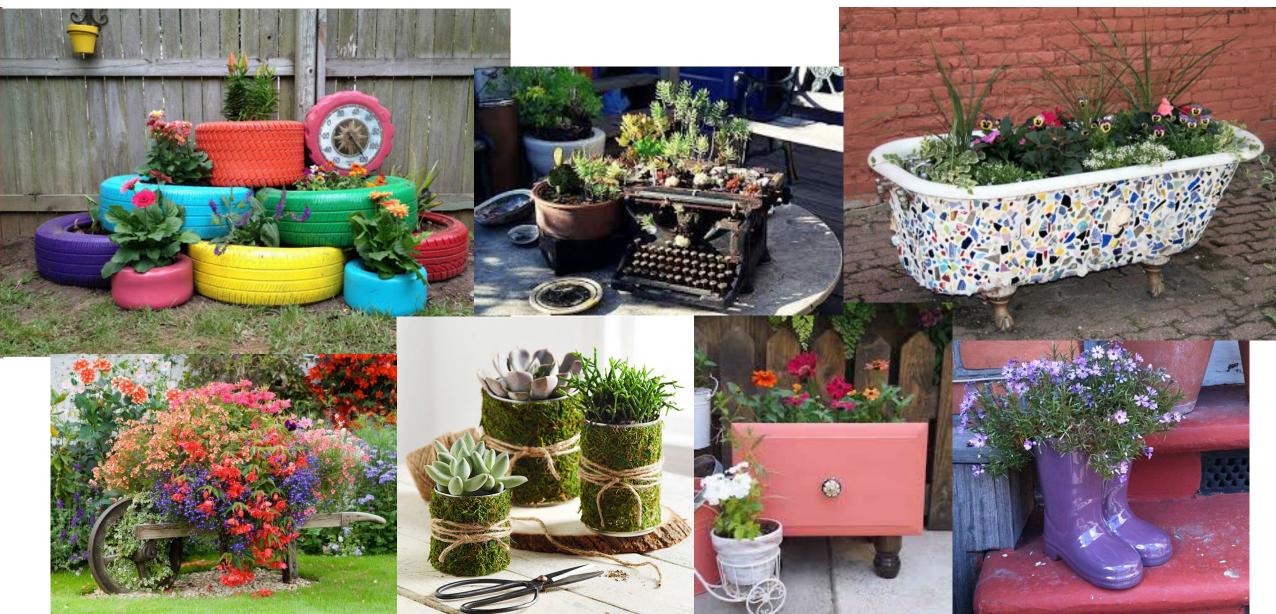
- Convenient
- Saves water
- Variety of styles
- Not good for all plants
- Limits root space





Ollas for self watering

### Container Selection - Repurposed Containers Unconventional items make good pots!



# What to do... Tricks for tall heavy pots

Place heavy pots on rolling bases

Use a hand truck to move heavy pots

Plant the pot on location



### More tricks for tall heavy pots

• Fill the bottom half of a tall pot with light weight materials to take up space - packing peanuts, empty plastic pots upside down, pool noodles, plastic bottles. Cover with a barrier (burlap, cardboard) and fill the top half of the pot with soil for planting.

• Plant a more shallow container on top of the filler material. Put sphagnum moss or mulch around the plants at the top of the container so plants appear to be planted in the decorative pot.

• Use an insert which leaves the bottom of the pot empty.

# Choosing the Right Sized Container Some things to think about...

- Root growth Plants need space to spread their roots.
   Limited space can stunt growth, reduce nutrient uptake, and stress the plant.
- Water management a large pot will retain too much water and lead to root rot; a small pot may not hold enough moisture
- Temperature regulation potting soil heats up and cools down faster in smaller than larger pots, impacting roots

General rule – a pot should be 2" larger than the root mass of the plant(s).

#### Other Considerations - Pot Accessories

 Saucers to hold water – provides protection for surfaces, but can cause root problems

 Pot risers/feet – helps with drainage and air space; protects from heat

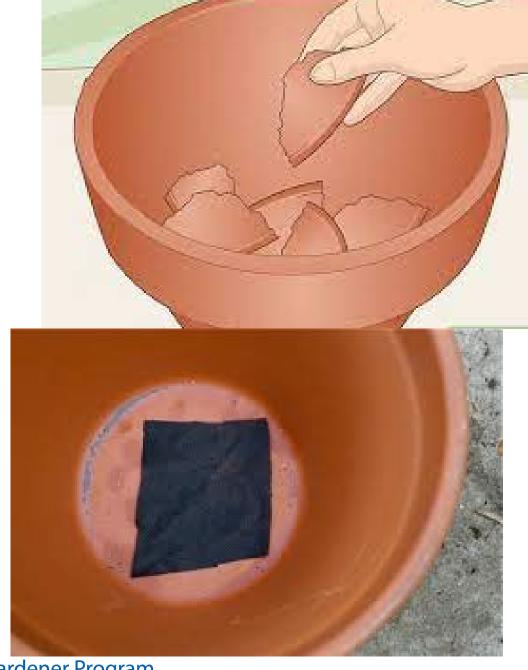
Stakes, cages for vegetables, trellises for vines



### **Drain Hole Tips**

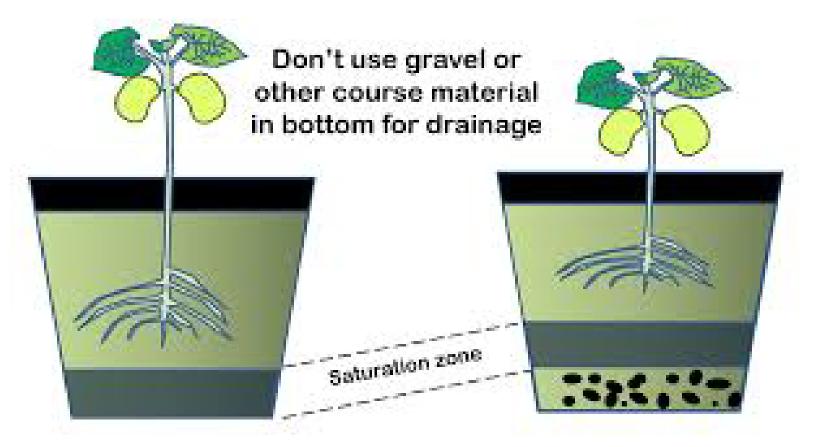
Good drainage is essential!

 Cover the drain hole to allow for drainage while holding in the potting soil. Use one or or two pottery shards, a small screen, small gauge netting, a coffee filter



# Should you add gravel at the bottom of the pot? NO!

The saturated zone is shifted up, possibly causing root rot.







# Drainage is essential! Drilling a Hole in Your Pot

Use different bits for different pot materials.

- Normal bit metal and plastic pots
- Masonry bit unglazed ceramic pots
- Tile or glass bit glazed ceramic pots



Be sure to wear goggles!





### **Sanitizing Used Pots**

Remove old soil, deposits, algae – brush, scrape, and rinse

- Soak in 9 parts water to one part bleach solution
  - -10 minutes for non-porous pots
  - -3 hours for terra cotta pots
- Rinse thoroughly



# **Good Plants Start with Good Soil**

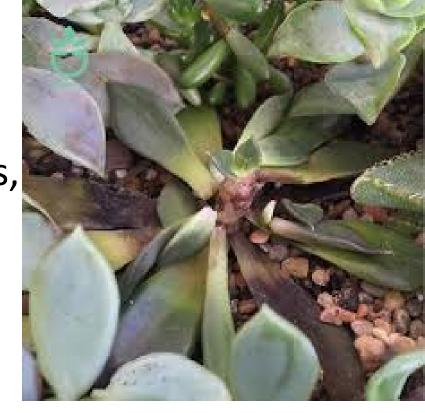
- The best container soil will be lightweight, retain moisture, and be well aerated.
- Air space around the roots is essential – plants will die if they don't have enough air around their roots.
- The best idea use a pre-made soil less mix (potting soil or potting mix) containing high amounts of bark, sphagnum peat with vermiculite or perlite



## A little more on soil... Know your plant's needs

 Some plants like special soil - azaleas, camellias, and Rhododendrons like more acidic soil

 Succulents are drought tolerant and prone to root rot. They prefer soil that drains well and stays on the dry side.



 You can make your own soil! There are great recipes available online.



### **Using Soil From the Garden**

• Soil from your garden is **not** a **good choice** for pots – it is too dense, leading to drainage problems and root rot. It can contain pathogens that can infect plants. It is not the proper pH, which can lead to nutrient

deficiencies.

• It dries out more quickly and can become compacted.

• It can also contain weeds and insects



# Soil Composition Many Possible Amendments You Can Add

- Sphagnum peat
- Bark
- Coco (Coconut) coir
- Pumice
- Sand

- Perlite
- Vermiculite
- Compost
- Fertilizer
- Moisture retention beads

#### **Soil Amendments**

#### **Sphagnum Peat**

- Comes from decomposed plants in bogs (mostly from sphagnum moss)
- Lightweight retains moisture without becoming waterlogged
- Doesn't easily compress
- Good for acid loving plants and plants that like it moist



#### Bark

- Is ground and partially composted
- More sustainable than sphagnum peat
- •Used in less expensive potting mixes instead of peat
- Helps with aeration, but dries out more quickly than peat – requires more watering



#### **Soil Amendments**

#### Coco (Coconut) Coir

- Made from coconut husks –
   sometimes used instead of peat
- Similar to peat retains water
   without becoming soggy; lasts longer
- More sustainable than peat
- •Helps with aeration holds large amounts of water allows excess to drain freely.

#### Vermiculite

- •A gray, spongy material (heated mica chips) it increases water retention in mixes, holds on to nutrients and keeps fertilizer available for the plant roots for a longer period of time.
- •Helps with water retention best for plants that like soil to stay damp



#### **Soil Amendments**

#### **Pumice**

- •Adds structure to the soil and does not break down.
- Works like a sponge, holding water until the plant needs it.
- Provides excellent drainage helps prevent "wet feet" for plants that like it to be drier (like succulents and cacti)

#### Sand

- •Improves drainage and is often added in large quantities to mixes for cacti, succulents, and other plants that like it dry.
- •Can help provide structural stability for tall/top heavy pots.



# Soil Amendments – Perlite Popcorn of the Soil!

- White volcanic rock that is similar to Styrofoam.
- Light weight and porous used to improve the drainage and aeration of potting mix.
- Holds water so it is readily available to plants, but dries out quickly
- Floats and lightens potting mixes





### **Soil Amendments - Compost**



- This is occasionally included in potting mix for added nutrients
- It may reduce air space in the soil and should be used sparingly for potted plants.
- Compost should make up no more than 1/3 of a potting mix.



#### **Soil Amendments - Fertilizer**

- Fertilizer is sometimes added to potting mixes, usually in a slow-release form that breaks down gradually over time when it comes in contact with water.
- Small amounts of nutrients are released over the course of weeks.
- Eventually this initial source of nutrients will be exhausted, and potted plants will require additional fertilizer.

### **Moisture Retaining Treatments**

• These gel-like "water storing crystals" are polymers with the ability to absorb large amounts of moisture and slowly release it into the soil.



• Potting mixes with moisture retaining treatments are best for potted annuals - not for succulents or other drought tolerant plants.



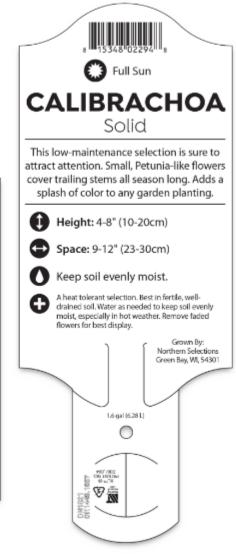




## Selecting Plants – Check the plant tag

- Light requirements #1 priority
- Water needs
- Bloom time
- Growth rate and size
- Fertilizer needs
- Sunset Garden/USDA planting zone El Dorado Hills – Zone 9b
- A good hint "works well in containers"







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# What Does it Mean? Defining Sun Exposure Terms

Full Sun	6 plus hours of sun a day
Partial Sun	4 to 6 hours of sun a day, shaded from the most intense sun
Partial Shade	4 to 6 hours of morning sun with shade the rest of the day
Dappled Sun	Receives a mix of sun and shade throughout the day
Full Shade	Receives very little direct sun

### Selecting Plants – External Inspection

- Healthy leaves
- No pests or weeds
- Flowers in bud stage rather than flowering

Check roots at pot holes



## **Choosing Plants – Internal Inspection**

Gently remove the root ball to look for:

Soil and roots that hold together

Small to medium sized roots visible

Roots are white to light colored

 Minimal root twinning or circling (a sign the plant might be root bound)



### **Managing Root Bound Plants**

 Cut or pinch off roots that have circled

 Cut or score the root ball in four places

 Gently ease the roots apart to encourage new root development



## Preparing the root ball for planting

Roots and soil should be moist

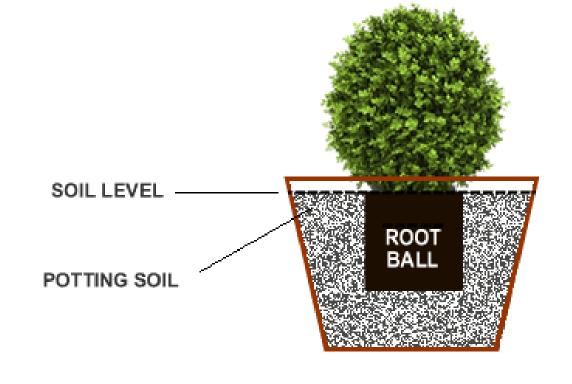
Gently spread and separate the roots

 Ease the soil away so the roots will grow into the new potting soil, unless the plant has sensitive roots.



### Planting guidelines

- Plants should be moist at planting remove gently from container and gently loosen roots and
- Fill the pot with enough moist soil so the top of the plant's root ball is a couple of inches below the pot's rim.



- Place the plant in the pot and add soil to fill in around it on all sides. Stems should be no deeper in the soil than they were in the nursery container.
- Press soil gently with fingers and tap the pot to settle.
- Water

### Don't forget to add mulch!

What is mulch? A soil cover.

• It helps hold in moisture, maintains root temperature, and reduces weeds.

 It can be small wood chips, leaves, grass clippings, straw, shredded newspaper, burlap or coco discs placed on top of the soil, pea gravel for succulents, and more.







### Time to repot?

- Every two to three years pot up to the next size container (2" in diameter)
- Signs to look for:
  - -Plant is pot bound
  - -Plant looks too large for the pot
  - -Soil level is sinking
  - -Leaves are discolored
  - -Plant(s) wilt frequently



### Something to keep in mind...

Some plants perform better when their roots are restricted in crowded pots. Check every two years.



Sansivieria



**Chinese Money Plant** 



**Spider Plant** 



**Holiday Cactus** 



**African Violets** 



Some succulents -Jade Plants



**Some Philodendrons** 



Zamioculas (ZZ plants)

### Replacing soil when repotting

 Potting mixes don't last forever – the natural nutrients may become depleted and fertilizer may not help.



- The mix can become compacted and filled with roots.
- Pests, diseases, and weeds can also be problems.
- Give the soil a good look does it look healthy? You may be able to get away with a partial replacement.





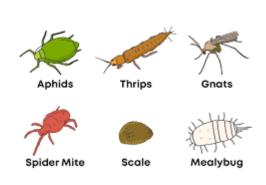


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### Taking care of container plants

- Water the amount will vary
- Pruning
- Fertilize follow label directions
- Check weekly for pests and diseases











# Taking Care of Container Plants Water Considerations

 Water when the top inch of soil is dry – use the finger test or a moisture meter to check.

 Water early in the day and avoid getting foliage wet.

Water slowly and make sure to cover the full top of the pot.

• Thirsty pot/wilted plants – water multiple times with a brief interval in between.



Before

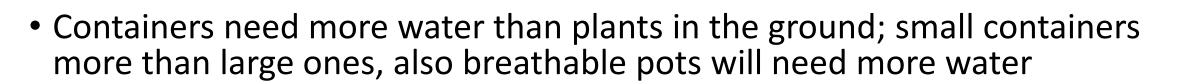


# Taking Care of Container Plants Water Considerations

 Water until you see water drain from the bottom of the pot – this leaching helps prevent mineral/salt buildup that can harm plants.

Do not let water stand in the saucers below the pot.
 Putting rock in the saucer can help manage runoff water.

 Watering routines should change with the seasons.



### Want to promote plant growth and flowers? Prune!

• Deadhead/Clean up – remove faded blooms frequently to encourage new flowers. Take off the full stem or cut to the closest bud if you see one. Be sure to remove spent and dropped leaves.



• **Pinch** – remove the top of the plant's main stem to encourage new branches to grow. The result is a stronger plant with more flowers.



## Want to promote plant growth and flowers? Fertilize!

 Fertilize with a complete fertilizer containing nitrogen, phosphorus, and potassium – follow label instructions using the amount specified or less. Start with half recommended amount.

 Use liquid or dry fertilizer – scratch dry fertilizer into the soil under the mulch.

• Slow-release fertilizers require less frequent application. Some of these fertilizers are activated by heat and are dormant in cold weather.







## Want to promote plant growth and flowers? Fertilize!

• Always carefully follow label directions as to the amount of fertilizer to use and how often to apply.

Never fertilize when plants are dry or stressed.

• Over application of fertilizer can burn plants.





### **Taking Care of Container Plants**

- Start with healthy, disease resistant plants
- Provide optimal growing conditions
  - -Light
  - -Water
  - -Good drainage
  - -Proper plant spacing
  - -Plenty of air circulation
  - -Fertilization
  - -Take special care during weather extremes





**P** - Prune/Trimmed **W** – Water

**F** – Fertilizer **M** – Misted

**R** – Repot C - Cleaned

I – Insect Control

Jan	Feb	Mar	Аp	May		June		July		Aug		Sept		Oct		Nov			Dec															
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### **Container Gardening in Cold Weather**

 Use seasonal plantings that match our area's winter temperatures.

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• Check the weather frequently – avoid a surprise!

 Move plants to a protected location (a garage, shed, or under a patio cover). Cluster plants along house walls, which have more residual heat to radiate at night (south facing is best). Containers can benefit from being clustered.



### **Container Gardening in Cold Weather**

• Water plants during the warm part of the day before a freeze. Moist soil will insulate the roots and evaporation will help warm the foliage.

 EXCEPTION – do not water succulents. Leave them on the dry side – extra liquid in leaves can cause them to burst in a freeze.

 Mulch – add protective soil covering to within an inch or two of the stems to protect the soil and roots.





### **Container Gardening in Cold Weather**

- Cover frost tender plants all the way to the ground before sunset – use sheets, blankets with stakes or frameworks to hold covers off foliage, remove covers the following morning. Use materials that breath - not plastic.
- Frost cloth provides 4 to 8 degrees of protection and can lay directly on plant foliage. It can stay on the plants for a few days because it allows light and air to penetrate.
- Add warmth with strings of Christmas tree lights under the protective cover – use outdoor rated incandescent lights (not LED lights). Consider using a timer so lights come on at dusk and turn off in the morning.









### What to do if there is frost damage

• Be patient! Don't prune off dead-looking branches.

 Wait until the weather warms - damaged leaves and branches can help protect new growth from more frost damage.

• Once you trim off damage, wait at least a month to give the plant a chance to bounce back.



#### **Containers and Hot Weather**

 Pot up - Transplanting into larger containers before the heat wave will increase rooting space and provide a larger reservoir for moisture.

 Move pots to cooler locations for shade during the hottest part of the day. Plant performance won't be impacted, but cooling plants will reduce water needs.

• Move containers off/away from hot pavement or decks (use pot feet!).

 Watch for radiant heat for plants near walkways, patios, buildings, and other structures that radiate heat.



#### **Containers and Hot Weather**

 Make shade for your plants - Use a shade cloth, patio umbrellas, a temporary structure, or even other plants/trees to protect sensitive plants from the direct sun to reduce the heat stress on plants and prevent leaf scorch.

 Group containers so pots can shade each other, decreasing the amount of sun that hits their sides and reducing

evaporation and unnecessary water

loss.





# Container Gardening in Hot Weather Watering Tips

Check your containers every day!

 Use saucers or catch trays - Excess water can be absorbed back into the pot through the drainage holes. Avoid letting the water stand too long to prevent root disease

 Water effectively - Make sure the entire root ball is thoroughly wet. That may take several passes with the hose. Use a moisture meter or even a longhandled screwdriver to check. Submerge a very dry pot in water for a short time if needed





# Container Gardening in Hot Weather Watering Tips

- Water in the morning This helps minimize water loss due to evaporation, which is less likely during the cooler part of the day. Plants are fully hydrated before the heat intensifies during the day.
- Wilting in the heat of the afternoon is normal for some plants, especially those with big thin leaves such as hydrangeas. If plants are wilted in the morning, water immediately.



# Container Gardening in Hot Weather Some additional tips...

• Mulch, mulch again! When temperatures are extreme, having a good layer of mulch insulates the soil and prevents it from heating up excessively and losing water to evaporation.

• Don't fertilize until weather cools. Feeding spurs growth that increases a plant's water needs and adds to plant stress.







### Container Gardening in Hot Weather Watch out for Pests

• Spider mites thrive in hot, dusty conditions. Look for wispy webs covering leaves and stems. Knock them down with a strong stream of water early in the morning so foliage can dry. This destroys the mites and their webs and disrupts what attracted the mites in the first place – dry, dusty leaves.



• Avoid spraying neem oil or other treatments (often recommended for pest control) in hot weather. The oil coats the plant's foliage and increases its sensitivity to extreme heat, "cooking" its tender leaves.



### Integrated Pest Management Best Practices

### Encourage beneficial insects (biological controls):

#### Lacewing



Mites, eggs, aphids

**Lady Beetle** 



Aphids, whiteflies

**Mantis** 



Many insects – good and bad

**Syrphid Flies** 



Aphids, mealybugs, whiteflies

#### **Soldier Beetle**



Aphids, beetle/moth eggs

**Assassin Bug** 



Any insect!

#### **Pirate Bugs**



Mites, thrips

#### **Parasitic Mini Wasps**



Aphids, caterpillars from the inside out



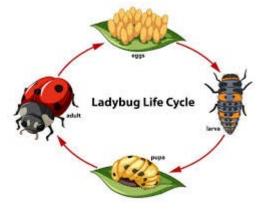
### Beneficial Insects in the Garden - Tips

 Plant flowering and nectar producing plants to attract them to your garden.

 Control ants - they attack the natural enemies of honey dew producing pests.



• Know what beneficial insects look like as adults and in their immature stages.



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• Avoid using broad spectrum pesticides — they kill natural enemies as well as pests. UNIVERSITY OF CALIFORNIA UC Master Gardener Program

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### Use least toxic pest controls



Snail



- Keep an eye out for early detection
- Pinch or trim off damage
- Hand pick (snails, slugs, caterpillars, weeds)
- Beer or sugar water bowls for slugs and snails
- Try water blasting (aphids, spider mites)
- Use alcohol swabs

#### Check often and be persistent.









**Aphids** 





**Mealy bugs** 



**Caterpillars** 

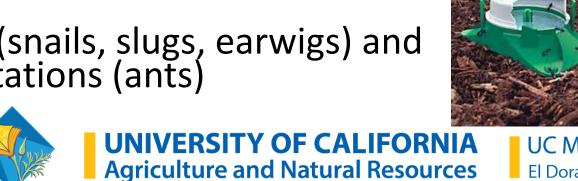
### First Choice when needed - Less toxic pesticides

• Insecticidal Soaps - Controls aphids and white flies; full coverage is needed with possible repeat applications.

 Horticultural oils – Aphids, white fly, mealybug, scale, spider mites, thrips. Includes petroleum-based oils (superior, narrow range, and horticultural oils) and plant-based oils (neem and canola oils)

• Microbial insecticides – Bacillus thuringiensis (Bt) for leaf feeding caterpillars.





### **Important Guidelines for Chemical Controls**

- Select the right product for the problem.
- Go as least toxic as possible.
- Read the label thoroughly and follow instructions.
- Wear protective clothing.
- Use products as directed.





Finding active ingredients on a pesticide label:

1.0%

99.0%

Active Ingredient: Potassium Salts of Fatty Acids Other Ingredients Total 100.00%

OF CHILDREN CAUTION

KEEP OUT OF REACH

Net Contents: 32 FL OZ/946 mL

Pesticide labels show the active ingredient in a product. This example shows the active ingredient in some insecticidal soaps.



Dispose of properly.

### Planting a container arrangement Important considerations

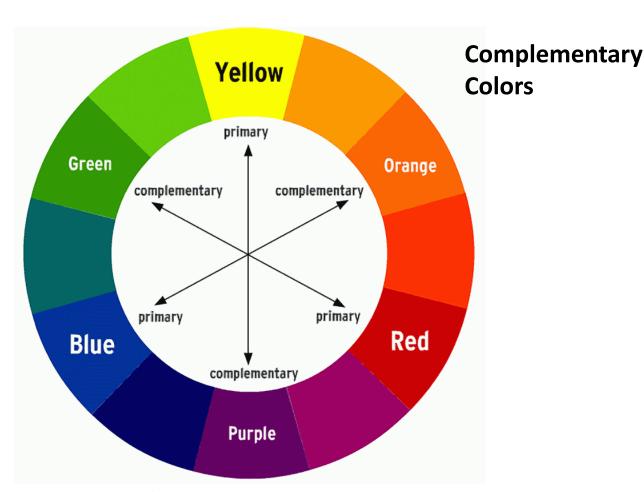
 Select plants with the same requirements – light, fertilization, moisture, drainage

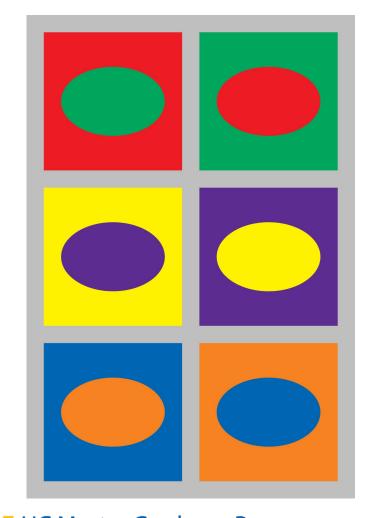
Consider design elements – color, texture,
 size and height, repetition and contrast.

It's a matter of personal taste!



# Building a Beautiful Container Color Principles







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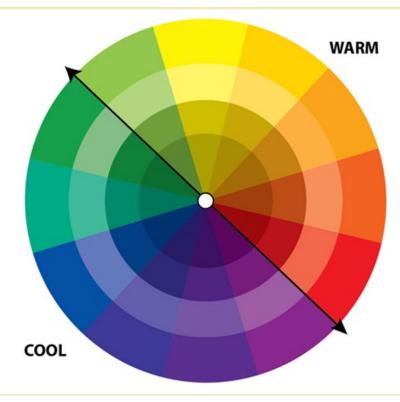
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#### **Cool and Warm Colors**

#### **Warm Colors**

#### **Cool Colors**



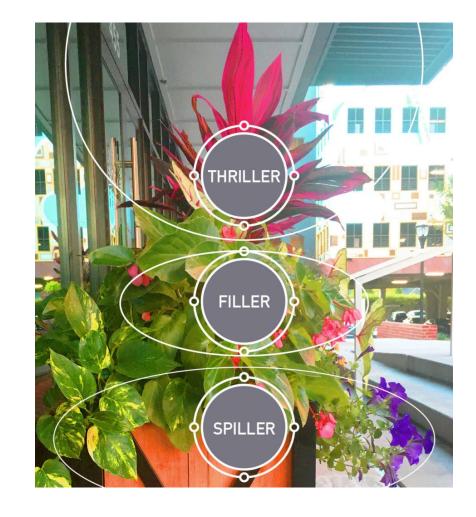




### A popular model of container design

#### Thriller

- -Vertical accent plant
- -A focal point
- Filler
  - -Plants that blend
  - -Adds mass to the display
- Spiller
  - -Plants that cascade
  - -Connects the pot to the ground



### Thriller-Filler-Spiller

A recipe for creating beautiful planting containers



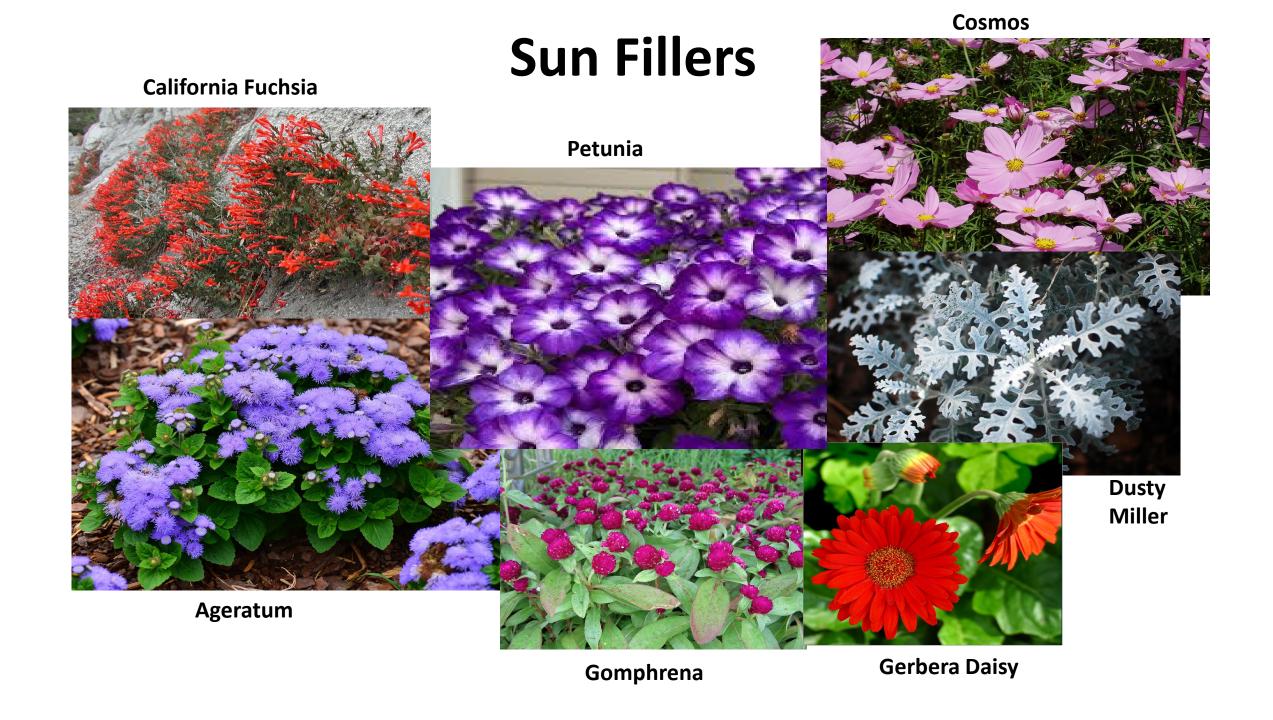


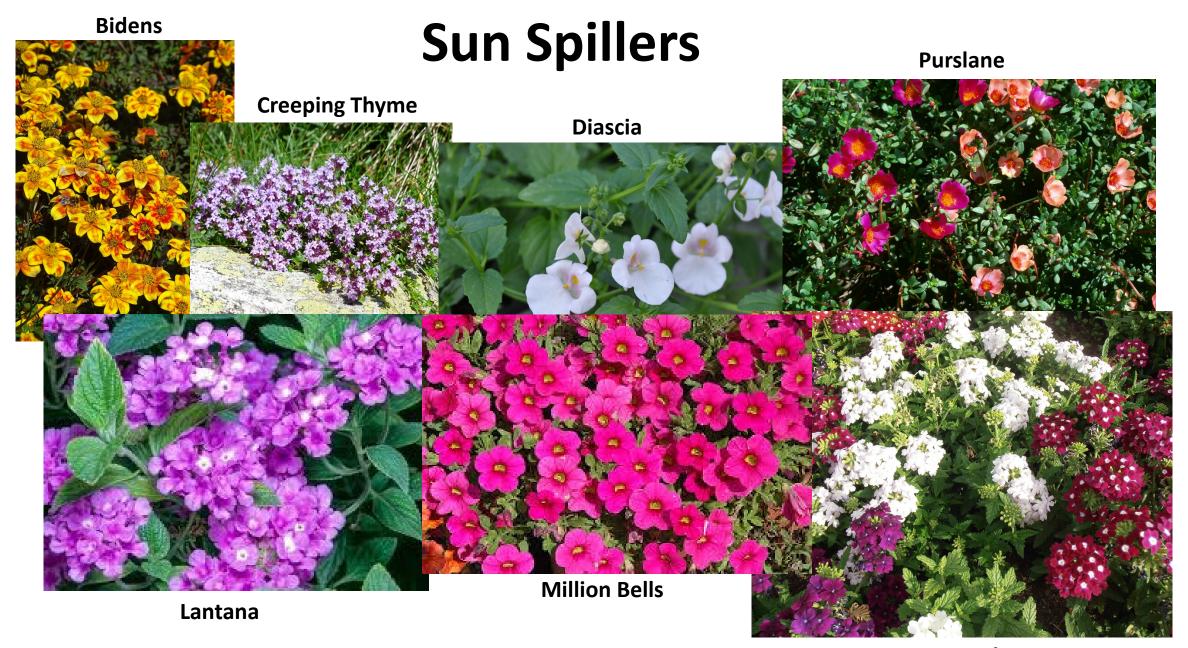






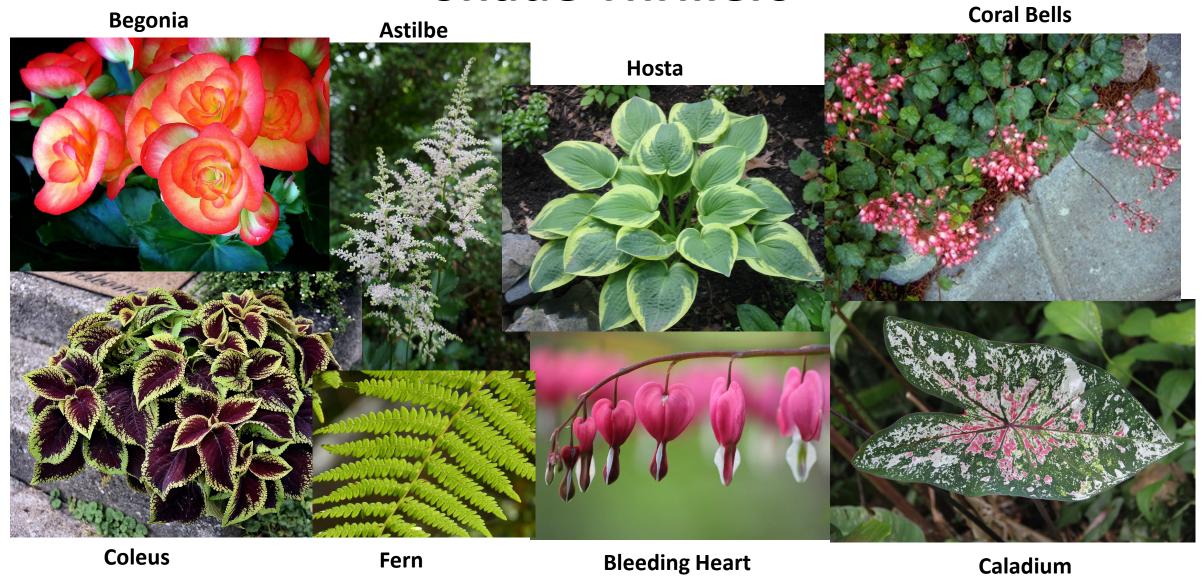
Cuphea

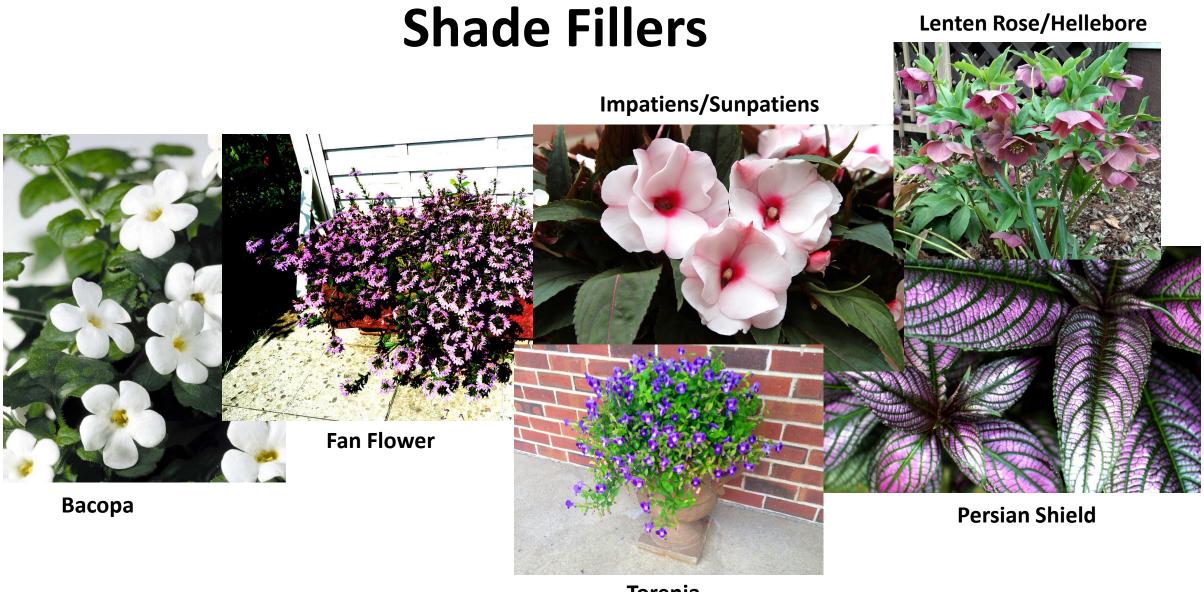




Verbena

# **Shade Thrillers**





**Torenia** 

**Creeping Jenny** 

# **Shade Spillers**





#### **THRILLERS**



# **SUN**

- Angelonia (Angelonia angustifolia)
- Cannas (Canna x generalis)
- Celosia (Celosia argentea)
- Cordyline (Cordyline ssp.)
- Coreopsis (Coreopsis gigantea)
- Cuphea (Cuphea hyssopifolia)
- Dahlia (Dahlia pinnata)
- Dianthus (*Dianthus caryophyllus*)
- Geraniums (*Pelargonium X hertorum*)
- Lavender (Lavandula augustufolia)
- Pentas (*Pentas lanceolata*)
- Yarrow (Achillea millefolium)

#### **SHADE**

- Astilbe (Astilbe spp.)
- Begonia (Begonia Groups & Hybrids)
- Bleeding Heart (Lamprocapnos spectabilis)
- Caladium (Caladium)
- Coleus (Plectranthus scutellarioides)
- Coral Bells (*Heuchera*)
- Ferns (Fern spp.)
- Fuchsia species upright
- Hosta species

Most shade happy plants tolerate shade for most daylight hours, but still need 2-4 hours of sunlight daily. Morning direct sunlight is best. Always refer to the plant tag. *Full sun* to *partial shade* in our area means to protect the plant from our harsh afternoon sun.



#### **FILLERS**

# **SUN**

- Ageratum (Ageratum houstonianum)
- Blue Daze (Evolvulus glomerata)
- California Fuchsia (Epilobium canum)
- Cosmos (Cosmos bipinnatus)
- Dusty Miller (Centavrea cineraria)
- Gerbera Daisy (Gerbera jamesanii)
- Gomphrena (Gomphrena globose)
- Petunia (Petunia X hybrid)
- Salvia (Salvia officinalis)

Begonia (Begonia Groups & Hybrids)

**SHADE** 

- Bacopa (Bacopa monnieri)
- Cyclamen (Cyclamen persicum)
- Fan Flower (Scaevola)
- Impatiens (Impatiens walleriana)
- Lenten Rose (Hellebore orientalis)
- Persian Shield (Strobilanthes dyeranus)
- Torenia (Torenia fournieri)
- Viola species

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### **SPILLERS**





- Bidens (Bidens ferulifolia)
- Brachyscome (*Brachyscome Hybrid*)
- Creeping Thyme (Thymus serpyllum)
- Diascia (Diascia spp)
- Lantana (Lantana camara)
- Licorice Plant (Helichrysum petioiare)
- Million Bells (Calibrachoa)
- Purslane (Portulaca oleracea)
- Verbena (Verbena officinalis)

- Creeping Jenny (Lysimachia nummulria)
- Dichondra (Dichondra argentea)
- Ivy Geranium (Pelargonium peltatum)
- Lobelia (Lobelia erinus)
- Lithodora (Lithodora diffusa)
- Sweet Alyssum (Lobularia maritima)
- Sweet Potato Vine (Ipomoea species)
- Trailing snapdragon (Asarina procumbens)

Most shade happy plants tolerate shade for most daylight hours, but still need 2-4 hours of sunlight daily. Morning direct sunlight is best. Always refer to the plant tag. *Full sun* to *partial shade* in our area means to protect the plant from our harsh afternoon sun.

# **Themed plantings - Herbs**



# Themed Containers Butterfly/pollinator attracting



# Themed Containers Succulents

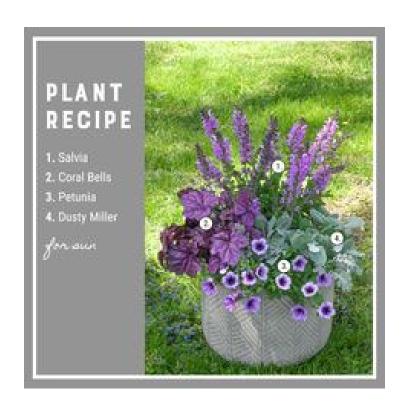








# **Monochromatic Theme**







# The most important thing...

# Have fun and enjoy your containers!



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# Need help?

- Reach out to the Master Gardener Help Desk 530-621-5512
   Office Hours: 9 am until noon
  - -Monday, Tuesday, Thursday, Friday (Spring and Summer)
  - -Monday, Wednesday, Friday (Fall and Winter)
- Visit the UCCE Master Gardeners of El Dorado County website

# mgeldorado@ucanr.edu

-Complete the online Ask a Master Gardner survey information





Questions???

Please turn in your evaluations – we appreciate your feedback!





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