

# Container Gardening Basics and Beyond

UC Master Gardeners of Monterey & Santa Cruz
April, 2019

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## Containers for Any Environment & All Gardening Skill Levels

- Indoor and outdoor container gardening
- Container types – pros and cons
- Proper preparation – pots and plants
- Soils for different container and plant type
- Watering strategies
- Combination planting design
- Food Crops in a pot

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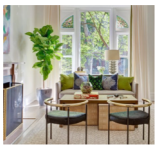
## Why Container Gardening? Why Not!!

- Quick & Easy
- Portable
- Endless re-do possibilities
- Focal point – draw the eye to one area or away from another
- Forgiving medium

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## Adaptability

- Indoor/Outdoor
- Indirect to direct indoor sunlight
- Full shade to full sun outdoor sunlight, water wise
- Tiny windowsill or balcony
- Covered patio, pergola, deck, poolside, formal garden, relaxed landscape


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## Voilà

- Showy plants + gorgeous pot = instant impact
- Unique plants + fun container = whimsical note


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## Small Spaces

- Confirm the amount & type of light the space receives
- Select plants suited to the container size & shape
- Consider spacing within the container

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## Container Accents in Larger Spaces

- Accentuate the positive
- Distract from the not so positive
- Define pathways
- Anchor other design elements
- Border water feature

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## Placement Matters & If Its Not Quite Right – Move it!

- If its in a container, the 'Goldilocks rule' applies
- Observation will dictate location change
- Sunlight, water, nutrients or soil?
- Frost

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## Choose a container

- One that you like
- The right size
- Porosity to match plant needs
- Effects on soil temperature
- Weight and portability
- Cost

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## Terra Cotta

- Porous—breathes, soil dries more quickly
- Needs watering more often
- Variety in size, shape, design
- Harmonious with plant and garden colors
- Relatively heavy
- Breakable

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## Glazed Clay and Ceramic

- Non porous-retains moisture
- Wide color, size and style choices
- Decorative!
- Relatively heavy
- Breakable

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## Wood

- Porous-breathes
- Ideal for large plants
- Relatively inexpensive
- Will rot--airspace under plant important
- Select durable wood
  - Cedar, oak, redwood, teak

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## Plastic

- Retains moisture
- Relatively light weight
- Less thermal insulation—collects heat
- Petroleum product—may leach chemicals, non-recyclable
- May crack and fade

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## Fiberglass

- Similar to plastic
  - Non porous
  - Wide variety in size, style and color
  - Less thermal insulation
  - Light weight
- Durable
- Expensive

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## Fabric

- Aeration
  - Roots air prune
  - Pot binding is avoided
  - Stable temperature
- Many sizes
- Light weight
- Relatively inexpensive
- Functional, temporary vs. decorative

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## Metal

- Non porous
- Conducts heat
- May rust over time
- Style
  - Cottage
  - Victorian
  - Industrial

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## Concrete

- Porous
- Durable
- Heavy
- Good insulator
- Lime content=alkalinity
- Expensive

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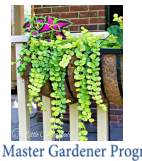
## Hanging Containers

- Variety of materials
  - Wire baskets lined with natural fibers
  - Plastic, clay, wood, metal
- Make use of vertical space
  - Hanging
  - Mounted on walls and railings
- Dry quickly due to exposure



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## Repurposed





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## The right sized container

- Has enough space for roots at maturity
- Soil to root ratio for hydration, thermal insulation and fertility
- Container size determined by
  - Diameter-the distance across the top of the pot
  - Volume in gallons
  - Height


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## Container size—small

- **1 gallon or smaller (4”-8”)**
  - Succulents
  - Bonsai
  - Herbs
  - Microgreens
  - Seedlings awaiting transplant



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## Container size—small

- **2.5 to 3-gallon (10”)**
  - Strawberry (1)
  - Lettuce (1 to 4)
  - Swiss chard (1)
  - Bush beans (1)
  - Turnips (4)
  - Small herbs (basil, chives)
  - Annuals (1 to 3)




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## Container size—medium

- **5 to 7-gallon (14”)**
  - Cabbage (1)
  - Collards (1)
  - Carrots (9 to 10)
  - Peas (4)
  - Perennial herbs (1)
    - Rosemary
    - lavendar
  - Annuals (3 to 4)




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## Container size—medium

- **10 gallon (16”)**
  - Pole beans on trellis (3to 4)
  - Dwarf shrub (1)
  - Dwarf citrus tree (1)
  - Dwarf bush berries (1)
  - Annuals (4-6)


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## Container size—large

- **15 gallon (18”)**
  - Broccoli, cauliflower (1)
  - Eggplant (1)
  - Peppers (1)
  - Determinate tomato with support (1)
  - Multiples of
    - Herbs and leafy greens
    - Annuals




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## Container size—large

- **25 gallon (24”)**
  - Indeterminate tomato and cage (1)
  - Summer squash (1)
  - Dwarf stone fruit tree (1)
  - Columnar apple (1)
  - Shrubs—rose, hydrangea, evergreen (1)
  - Black berry, raspberry (1)




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## Container size—XL

- **30 gallon (30”)**
  - Espalier fruit trees (1)
  - Japanese Maple (1)
  - Dwarf cherry (1)
  - Sweet corn (1)
  - Pumpkin, bush type (1)
  - Rhubarb


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UC Master Gardener & Bee Keeper Randy Fox shows container gardening done well!


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## Tricks for tall heavy pots

- Place heavy pots on rolling bases
- Use a hand truck to move heavy pots
- Plant on location


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## Pot accessories

- Saucers hold water
  - May cause root rot if not drained after watering
  - Protect floors and tables for houseplants
- Pot risers offer free drainage and air space
- Stakes, cages, trellises for trees vines and vegetables



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## Drain hole tips

- Cover hole so water drains freely while holding the potting soil in.
  - One or two shards—no more!
  - Screen
  - Coffee filter

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## Should you add gravel? NO!


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## Drilling a hole in your pot

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

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## Sanitizing used pots

- Remove soil and deposits
  - Brush
  - Scrape
  - Rinse away
- Sanitize in 10% bleach solution (9 to one)
  - 10 minutes for non porous pots
  - 3 hrs. to overnight for terra cotta
- Rinse thoroughly


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## Soil Composition

- Commercial potting soil, cps + amendments or build your own potting soil
- Know your plants' needs
- Sun exposure may influence the amount of amendment needed
- Control water retention, drainage, aeration, nutrient absorption

OMRI LISTED For Organic Use

cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

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## Potting Soil Tips

- Buy what you need for your project
- Leach potting soil thoroughly before planting to reduce soluble salts
- Container soil structure engineered to hold large qty of H20 in a small volume & maintain high volume of aeration
- Bulky organic materials needed

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## Amendments

- Sphagnum peat
- Compost
- Coco coir
- Pumice
- Sharp Sand
- Perlite
- Vermiculite

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## Sphagnum Peat

- Very stable organic material that holds water and air well, does not decompose quickly and drains freely
- It is very acidic, pH around 4.0, and yellow to light brown in color. Sphagnum peat is the least decomposed of the general categories of peat.
- Plants that prefer moist soil
- Acid loving plants are fans!

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## Coco coir

- Excellent substitute for sphagnum peat as the base potting mix ingredients in Soilless potting mixes, a renewable organic resource that lasts longer than sphagnum peat before breaking down. Adds bulk and aeration to potting mixes, can hold a large amount of water, excess water is able to drain freely from the potting mixture
- pH is neutral

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## Pumice

- Provides soil structure, does not break down
- Works as a sponge, holding H20, until plant needs it
- Prevents 'wet feet' as well as perlite, but doesn't float
- Does not hold as much H20 as Vermiculite
- Provides excellent drainage for Succulents & Cacti

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## Sharp Sand

- Increases H20 drainage
- Great addition to prevent 'wet feet'
- Structural stability for tall/top heavy plants
- Succulents and Cacti
- Some Salvias and Lavenders

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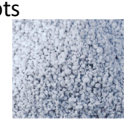
## Perlite

- Super heated volcanic glass, white, popped and porous like a popcorn kernel
- Holds water on the outside, readily available but dries out quickly – aeration/drainage
- Increases aeration, more O2 to roots
- Lightens potting mix
- Floats



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## Vermiculite

- Compressed dry flakes of a silicate material which is absorptive and spongy, pale brown
- Expands like a worm shaped sponge when wet
- Best used for plants that require soil to stay damp and not dry out – water retention
- Neutral pH

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## Additional Amendments

- Blood Meal – nitrogen amendment, green it up
- Bone Meal – calcium, phosphorus only if soil above pH 7.0, dangerous for dogs in large quantity
- Green Sand – from sea bed, contains phosphorus & trace minerals/vitamins
- Humus – highly decomposed organic matter, adds structure to soil
- Compost – stretches potting soil, never exceed 1/3 of mix
- Worm Castings – compost, fertilizer & soil amendment
- Coffee Grounds & Egg Shells

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## Potting Soil Recipes

- Seed Starting Mix - 1 perlite or pumice 1 vermiculite 1 coir/sp peat (presoaked)
- Organic Mix – 1 sp peat 1 peat humus 1 compost 1 sand
- Basic Mix – 8 potting soil w/p or v 1 sand 1 sp peat, compost & or rotting manure
- Acid Lovers – 8 potting soil 1 p/p 1 v 8 sp peat ¼ green sand ¼ gypsum
- Succulent/Cacti Mix – 3 potting soil 2 sand 1 pumice

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## Love Apple Farm Tomato Mix

- Organic Potting Mix – 1 cy
- 1 C Fish meal
- 1C 4-6-3 dry organic fertilizer
- 1 C Bone meal
- 3-4 crushed egg shells
- 2 crushed aspirin

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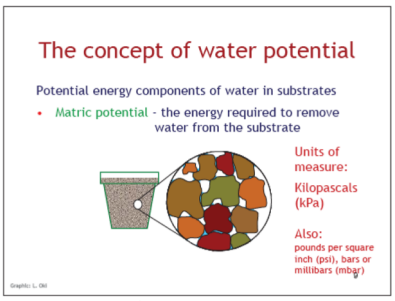
## Watering Plants in a Container

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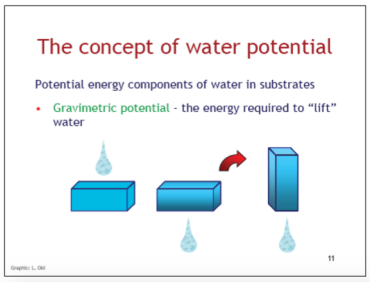
## Understanding Water Potential in a Container

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## Shallow vs Tall

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## Choosing nursery stock

- Read plant tag
  - Water needs
  - Light requirements
  - Bloom time
  - Spacing
  - Growth rate and size
  - Fertilization
  - Cold hardiness
  - Suggested uses… "works well in containers"


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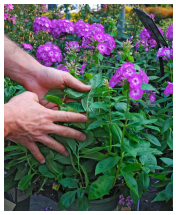
## Choosing nursery stock

- **External inspection**
  - Bright green color—no yellow leaves
  - Absence of pests and weeds
  - Bud stage before flowering
  - Smooth bark on trees and shrubs
  - Check roots at pot holes



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## Choosing nursery stock

- **Internal inspection**
  - Don't be shy--do it yourself or ask nursery staff for help
  - Gently remove root ball from pot to look for
    - Soil and roots hold together
    - Small to medium roots visible
    - Roots are white or light colored
    - Roots free of 90° kinks
    - Minimal root twining or circling


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## Managing root bound plants

- Cut or pinch off roots that have circled
- Cut or score root ball in 4 places
- Gently tease the roots apart to stimulate growth of new roots

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## Preparing the root ball for planting

- Roots and soil should be moist but not wet
- Gently spread and separate roots
- Tickle "old" soil away so roots will grow into new potting soil—*some exceptions for plants with sensitive roots*

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## Planting guidelines

- Fill container ¾ full with moist potting soil
- Form a cone of soil in the middle of the pot for central plant
- Spread prepared roots around cone
- Support plant at ground level
- Fill in potting soil around roots to the same level on the trunk or stems as in the original pot
- Tamp by tapping pot or with fingers to settle
- Water in

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## Single specimen in a pot






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## Planting a container arrangement

- When combining plants
  - Select plants with same requirements
    - Light, fertilization
    - Moisture, drainage
  - Consider design elements
    - Color, texture
    - Size, height
    - Repetition and contrast

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## Container design 101

- **Thriller**
  - Vertical accent
  - Focal point
- **Filler**
  - Blends
  - Adds mass
- **Spiller**
  - Cascades
  - Connects to the pot


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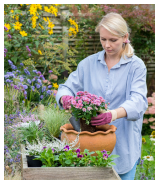
## Plant in this order

- ¾ fill with potting soil
- Place plants first to see where they'll go
- Start with the thriller in the middle and work your way out
- Fill in with potting soil

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## Design success—grand scale


succulents


shade plants


sun loving plants

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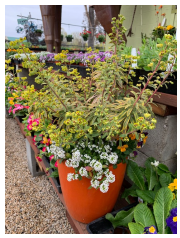
## Design Success—small scale





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## Time to repot?

- Every two – three years
- Repot to the next size container—up 2" in diameter
  - When pot bound
  - Gets too large for pot
  - Sunken soil level
  - Discolored leaves
  - Frequent wilting

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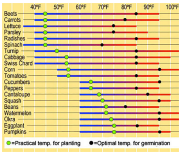
## One container—all seasons

- Ornamental
  - Bulbs planted in fall
  - Topped with pansies
  - Narcissus-daffodils-tulips bloom successively in spring
  - Repot with tomato in summer (remove bulbs)
- Successive food crops
  - Warm season plants
  - Cool season plants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## Planting seeds in containers

- Sew directly
  - Radish, carrots, beans, cucumbers, peas, lettuce, spinach beets, turnips, scallions, squash
- Follow
  - Planting time and depth
  - Sew in grids vs rows
  - Thin to proper spacing

Otherwise use transplants

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## Maintaining potted plants

- Watering—weekly
- Fertilizing—monthly
- Observing for pests and diseases—weekly
- Pruning
  - Deadheading—faded blooms
  - Pinching—to shape
  - Clipping—to shape and form


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## Integrated pest management:

- Prevention through sound cultural practices—using chemicals as last resort
  - Start with healthy disease resistant plants
  - Provide optimal growing conditions
    - Light, water, drainage, plant spacing, air circulation, fertilization
- Encourage beneficial insects
- Accurate pest identification
- Apply the least toxic strategy targeting the specific pest

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## Minimally disruptive pest controls

- Inspection for early detection
- Hand picking (snails, slugs, caterpillars, weeds)
- Barriers for birds and digging critters
- Copper edging for snails and slugs
- Water blasting
- Soap sprays, alcohol swabs
- Horticultural oils

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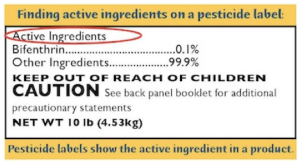
## Chemical Controls

- Pesticide sprays
- Baits
- Fumigation




- Read the label!
- Learn its impacts
- Choose the least toxic
- Wear protective clothing
- Use as directed
- Dispose of properly

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## Stumped? Ask a Master Gardener

Ask the UC Master Gardener Hotline
http://mbmg.ucanr.edu/hotline/


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## Help Us Better Serve You!

Our follow-up survey provides us the tools we need to grow and improve the quality of our program.

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