

The Splendid World of Succulents



Presented by
UC Master Gardeners of Placer County



University of California

Agriculture and Natural Resources

UCCE Master Gardener Program

Who Are Master Gardeners?

Master Gardeners of Placer County

- ❖ Extend **research-based**, sustainable gardening and composting information
- ❖ Present accurate, impartial information to **home gardeners**
- ❖ Encourage public to make **informed** gardening decisions



Who Are Master Gardeners?

Where to find us...

Online, in the Media, and Special Publications

- ❖ Hotline: Call **(530) 889-7388** or submit your questions online
- ❖ Website: pcmg.ucanr.org
- ❖ Facebook, Twitter, Instagram
- ❖ Gold Country Media monthly column
- ❖ *Curious Gardener* quarterly newsletter on our website
- ❖ *Gardening Guide and Calendar*



UC Master Gardeners of Placer County

Who Are Master Gardeners?

Where to find us...

Workshops, Fairs and Festivals, and Special Events

- ❖ Speakers by Request
- ❖ Workshops (various venues, check website)
- ❖ Farmers' Markets (seasonal: Auburn, Roseville)
- ❖ Fairs and Festivals Booths (varies)
- ❖ Garden Faire (April)
- ❖ Mother's Day Garden Tour (May)



Visit our website: pcmg.ucanr.org

University of California
UC Master Gardeners of Placer County

SKIP TO CONTENT SITE MAP [GIVE](#)

Placer Pests Gardening Essentials Gardening Year Round Vegetables Landscape Plants Fruits & Nuts UC Gardening Guides

Home
2021 Gardening Guide and Calendar
Join Our Email List
Ask a Master Gardener
School & Community Gardens
Curious Gardener Newsletter
About Master Gardeners
How to Become a Master Gardener
Contact Us
Placer/Nevada UCCE
For PC Master Gardeners Only

Connect With Us!

UC Master Gardeners of Placer County

Mother's Day Garden Tour postponed until 2022

Upcoming Events

Event Name	Date
Principles of Propagation Zoom Workshop	5/8/2021
Plant It and They Will Come: Planning for Pollinators Zoom Workshop	5/22/2021
Succulents Zoom Workshop: Part 1 Welcome to Succulents; Part 2 How to Propagate Succulents	6/12/2021
California Native Plants for Habitat Gardening Zoom Workshop	6/26/2021

HOTLINE UPDATE

The Hotline office continues to be closed to all walk-in clients. We are, however, available to answer your gardening questions. You can submit them by using the Ask A Master Gardener link below or by leaving a message on our Hotline number shown at the bottom of this web page.

[Ask a Master Gardener...](#)

Handouts

Succulent varieties for Placer County

Succulent Varieties for Placer County

[illegible]

107. *Walter S. Gentry and Flor County, Inc. University of California Cooperative Extension (UCCE) Extension in the Flor County Home growing community. UCCE is part of the Division of Agriculture and Natural Resources (DANR) of the University of California, 1012 Flor County, 124110 Avenue, Auburn, CA 95603, 1000 1000 1000.*
108. *Walter S. Gentry and Flor County, Inc. 1000 1000 1000, 1000 1000 1000, 1000 1000 1000.*

SELECTING & GROWING SUCCULENTS

SELECTING & GROWING SUCCULENTS

- 1) "Choose the right site for the right place."
 - Identify your climate zone (Climate Advisor USDA hardiness)
 - Planting indoors or outdoors? Is a pot or in the ground?
 - Is plant "hardy" or "tender"?
 - Consider microclimates (cold air sinks, hot air rises, etc.)
 - Succulent or cacti?
 - Growing needs may be different.
 - Consider safety issues (children, pets, etc.)
- 2) Consider growing and dormant periods.
 - This may affect where you place your plant for your viewing pleasure, for pollination, etc.
 - Tells you when to water and when to stop watering. Importantly it tells if a watering system.
 - Tells you when to plant in greenhouse or living indoors.
 - Very important to know when to propagate or divide your plant.
- 3) Temperature.
 - Is plant "tender" or "hardy"?
 - Good air circulation is very important, especially to minimize fungal pests and diseases.
 - Protect from wind during hot seasons of the year. (remember microclimates)
 - Protect plant from frost (frosty nights)
- 4) Lighting.
 - Not all varieties do not tolerate direct sun. As a rule to something giving energy for diseases.
 - If indoors, be careful if plant is next to a window as plant can get scorched.
 - Lighting affects plant growth and flower development.
 - Soil exposure:
 - If planting outdoors, southern, SW or SE facing slopes.
 - Exceptions: Christmas, Easter and Thanksgiving cacti
- 5) Watering.
 - Overwatering is not better of succulents!
 - Water thoroughly only when needed, when soil/dripping into is almost dry.
 - Mineral watering during dormant season.
 - Exceptions: Christmas, Easter and Thanksgiving cacti.
- 6) Mixing mix or self-draining mix.
 - Use cactus/succulent mix to make your own. Suggested mix:
 - 2 parts potting mix (low to no peat)
 - 2 parts perlite
 - 1 part volcanic rock (3/8")
 - Avoid vermiculite (holds too much moisture)
 - Can add coarser sand to the mix.
- 7) Fertilizer.
 - Fertilize during growing season. Show your succulent's growing/dormant season!
 - Succulents do not need a lot of fertilizer.
 - Use 1/4 N strength of a balanced fertilizer (10 Nitrogen-10 Phosphorus - 10 Potassium)
 - Fertilize cacti not recommended.

UC Merced Gardeners of Placer County are university of California Cooperative Extension (UCCE) participants, in the Placer County Homegardening community. UCCE is part of the Division of Agriculture and Natural Resources (ANR) of the University of California.
UCCE Placer County: 214174 Avenue, Auburn, CA 95603, (530) 885-4286
UC Merced Gardeners of Placer County website: 2141 885-4286; <http://www.ucanr.org/> 5/1/2011

COMMON PESTS, PROBLEMS & SOLUTIONS

Common Pests class. For details, visit our Pest Management page: jam.ces.illinois.edu

SYMPTOM	REMEDY
Apples	Spray off with water. Use beneficial insects. Control w/insecticidal soaps—know your succulents!
Caterpillars	Identify caterpillar, then treat. <u>Never</u> pick off! Use beneficial insects. Use of pyrethrin can burn leaves in direct sunlight; malathion (Orthogorin® BT).
Fungus (Anthracnose, black sooty mold, black spot, grey mold, Fusarium wilt, Powdery mildew, Root & crown rot)	Aerose affected area or leaf. <u>Acid overhead watering</u> . Provide good air circulation and a dry environment; size appropriate fungicide.
Insecticidal soaps	Use rubbing alcohol or cotton swab to remove (gently). Insecticidal soap, beneficial insects. Groom/rotate plants. Expect/throw away soil scrape or gently rub off w/brush. Remove leaf litter, fruitless spurs. <u>Never</u> oil (pyrethrin) can burn leaves in direct sun. <u>Three</u> away spurs with soil/scissors.
Scale	First, use fine toothed ant leaf.
Small/Slugs	First, use fine toothed ant leaf.
Spider mites (Acaridid/spider)	Wash seedling/water off right away onto pail. Expect/throw away soil. <u>Never</u> oil (pyrethrin) can burn leaves in direct sunlight.
Thrips	Insecticidal soap. <u>Never</u> oil (pyrethrin) can burn leaves in direct sun.

Concern Problems/Solutions: None. UC Davis Integrated Pest Management www.pestinfo.org

SYMPTOM	PROBABLE CAUSE	REMEDY
Black sooty growth on leaves & stems	Black sooty mold	Control honeydew aphids or scale causing "honeydew". Neem oil
Black spots on leaves	Fungal black spot	Remove leaves, tolerate if not severe
Black or brown stem (lower part of plant)	Fungal root rot	Remove plant from pot/soil. Disinfect pots/soil. Get infected area off. Repot propagate healthy section
Elongated growth (etiolation)	Not enough light	Change watering practices
Failure to bloom/very few flowers	Fertilizer: Too much nitrogen or fertilized during dormancy	improve light conditions
Failure to make new growth	Over-watering. Compacted soil (roots rotting)	Use balanced fertilizer at 8 strength, use green "super green" run
		Change watering practices. Augment soil. Use cactus/cactoid mix

6

Agenda

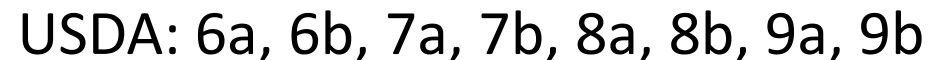
Welcome!

- ❖ WHO are Master Gardeners?
- ❖ WHO can grow succulents?
- ❖ WHAT are succulents?
- ❖ WHY grow succulents?
- ❖ HOW to grow succulents.
- ❖ HOW to manage pests & problems.
- ❖ Wrap-Up.
- ❖ HOW to propagate—next session.



Echeveria sp.

Our Sunset Climate Zone and USDA Plant Hardiness Zone



WHAT Are Succulents?

“All cacti are succulents, but not all succulents are cacti!”

Succulents

“Succu” = Latin = Juicy plant

A **characteristic** across
~ 70-80 plant families.
~ 12,000 varieties (species)!

A plant's ability to store and use
water in specialized tissues in its
leaves, stems and roots.

Cacti

Greek word = Prickly plant

A **plant family** = Cactaceae.
2000 + varieties (species).

Cacti are succulents w/spines!
Unique only to cacti:
Areoles (cushion-like buds).

Succulent or Cactus?

1



2



3



4



Evolutionary Timeline

Succulents	Cacti
~ 50 million years old!	~ 20 million years old!
Convergent evolution <u>across</u> the plant kingdom.	Continued evolutionary process driven by land mass changes/climate changes.
Roots shallow, wide spreading. Leaves, stems & roots modified.	Leaves to spines. Stems modified into pads, cylinders, joints.
Mostly native to Northern Europe and Far East. Large concentrations in Southern and Eastern Africa.	Native to Americas and surrounding islands (Galapagos, Caribbean).

Succulent Varieties for Placer County

Agavaceae (family name)

Agaves

- ❖ Artichoke agave (*A. parryi*)
- ❖ Century plant (*A. Americana*)*
- ❖ Miniature century plant (*A. toumeyana*)
- ❖ Parry's agave (*A. parryi huachucensis*)
- ❖ Royal agave (*A. victoriae-reginiae*)



Artichoke agave



Century plant

*UC Davis Arboretum "All Star"

Succulent Varieties for Placer County

Agavaceae (continued)

Yuccas

- ❖ Coral yucca/Hummingbird yucca* (*Hesperaloe paryiflora*)
- ❖ Curved leaf/soft leaf (*Y. recurvifolia*)
- ❖ Gold edge (*Y. filamentosa* 'Variegata')
- ❖ Spanish dagger (*Y. gloriosa*).



Coral yucca



Spanish dagger

*UC Davis Arboretum "All Star"

Photos: @ ncsu.edu; Yucca by Fritz Hochstatter, Dagger by KENPEI

Succulent Varieties for Placer County

Aizoaceae

Ice plants & Lithops

- ❖ Cooper's ice plant
(*Delosperma cooperi*)*
- ❖ Ice plants (*Cephalophyllum*)
- ❖ Living stones/ Pebble plants
(Lithops).



Cooper's ice plant



Lithops

*UC Davis Arboretum "All Star"

Succulent Varieties for Placer County

Aloaceae

Aloe

- ❖ Cape speckled aloe (*A. microstigma*)
- ❖ Coral aloe (*A. striata* x *saponaria*)
- ❖ Elias Buhr's aloe (*A. buhrii*)
- ❖ Mitre aloe (*A. perfoliata*)



Cape Speckled Aloe



Aloe striata hybrid

Succulent Varieties for Placer County

Aloaceae (continued)

Aloe

❖ Name that aloe!



Succulent Varieties for Placer County

Crassulaceae

Crassula

❖ Aeonium



Aeonium sp.



Aeonium
"Zwartkop" black

❖ Echeveria



Echeveria "Doris Taylor"



Echeveria sp.



Graptopetalum sp.

Succulent Varieties for Placer County

Crassulaceae (continued)

Crassula

- ❖ Sedum
- ❖ Sempervivum
 - “Hens & Chicks”



Sempervivum sp.



Sedum “Elsie’s Gold”



Sedum &
Sempervivum

Succulent Varieties for Placer County

Euphorbiaceae

Euphorbias and Spurges

- ❖ Crown of thorns (*E. Milii*)
- ❖ Firesticks (*E. tirucalli* 'Rosea')



Firesticks
(*E. tirucalli* 'Rosea')



Crown of Thorns

WHY Grow Succulents?

- ❖ Drought tolerant.
- ❖ Unique shapes, textures and flowers.
- ❖ Low maintenance.
- ❖ Source for pollinators.
- ❖ Large number of varieties.
- ❖ Versatile growing options.
- ❖ Commercial commodities.



WHY Grow Succulents? (continued)

Aesthetics



WHY Grow Succulents? (continued)

Horticultural

- ❖ Used indoor & outdoor, ornamental gardens, 'live' fence.
- ❖ Agave: rope, bio-fuel.
- ❖ Beauty & health products.

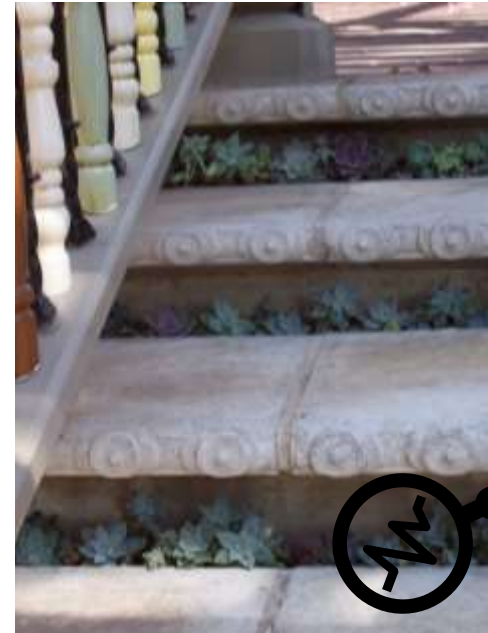


Food

- ❖ Agave sweetener, liquors (tequila).
- ❖ Indigenous people.
- ❖ Livestock food.



Creative Ways to Grow Succulents



Creative Ways to Grow Succulents



HOW to Grow Succulents

Seven Elements to Consider

1. “Choose the right plant for the right place!”
2. Consider growing and dormant periods.
3. Temperature requirements.
4. Lighting conditions.
5. Watering requirements.
6. Planting mix or well draining soil.
7. Fertilizing needs.



HOW to Grow Succulents

Seven Elements (continued)

1. “Choose the right plant for the right place!”

- ❖ Identify your gardening zone:
 - Sunset and USDA Hardiness zones.
- ❖ Consider microclimates.
- ❖ Is plant “tender” or “cold hardy”?



HOW to Grow Succulents

Seven Elements (continued)

2. Consider plant's growing and dormant seasons.

- ❖ Know the “particulars” of your succulent.
- ❖ **Growth cycle** is in response to temperature and water.
- ❖ **Dormancy cycle** is in response to cooler temperatures and lower moisture.

HOW to Grow Succulents

Seven Elements (continued)

2. Consider plant's growing and dormant seasons. (continued)

❖ Summer grower = Winter dormancy
(May-Aug) (Nov-Feb)

- Agave, Echeveria, Euphorbia, Lithops...

❖ Winter growers = Summer dormancy
(Nov-Feb) (May-Aug)

- Aeonium, Aloe, Bulbine, Crassula, Hawthoria, Kalanchoe, Sedum...

HOW to Grow Succulents

Seven Elements (continued)

3. Temperature

- ❖ Check individual succulent requirements.
- ❖ Provide good air circulation.
- ❖ Cooler temperatures—usually 40° minimum.
- ❖ **FROST KILLS!** Cover if frost expected or move to protected area.
- ❖ Protect from wind.
- ❖ Maximize microclimates.



HOW to Grow Succulents

Seven Elements (continued)

4. Lighting

- ❖ Some varieties don't tolerate direct sun.
- ❖ Greatly influences plant growth and flower development.
- ❖ Bright light generally okay.
- ❖ Provide proper sun exposure:
 - Southern, SW or SE facing slope.
 - Some exceptions: Christmas, Easter and Thanksgiving cacti...



HOW to Grow Succulents

Seven Elements (continued)

5. Water

- ❖ Overwatering = # 1 cause of succulents dying!!!
- ❖ Water thoroughly only when needed, when almost dry.
- ❖ Minimal watering during dormant season:
 - Begin withholding water in fall.
 - Exceptions: Christmas, Easter and Thanksgiving cacti...



HOW to Grow Succulents

Seven Elements (continued)

6. Planting Mix or Well Draining Soil

- ❖ Use cactus/succulent mix or make your own.
- ❖ Use light, well-draining mix.
- ❖ Amend soil with the mix when planting in the ground.
- ❖ Mulch top of mix/soil with volcanic rock, perlite or similar (not wood mulch).



HOW to Grow Succulents

Seven Elements (continued)

7. Fertilizer

- ❖ Fertilize during growing season:
 - Know your succulents' growing season.
 - Usually spring and summer.
 - Mid-summer, many succulents “resting”.
- ❖ Use $\frac{1}{4}$ to $\frac{1}{2}$ strength of a balanced fertilizer (10_{Nitrogen} 10_{Phosphorous} 10_{K Potassium}).
- ❖ Foliar fertilizers not recommended!!!



HOW to Manage Pest & Problems



HOW to Manage Pest & Problems

Pests/Animals

- ❖ Aphids
- ❖ Birds
- ❖ Deer
- ❖ Gophers & Rodents
- ❖ Mealy bugs
- ❖ Rabbits & Squirrels



Aphids on Sedum



Mealy bugs on Aloe
Photo by Severin Candrian



Mealy bugs

HOW to Manage Pest & Problems

Pests/Animals

- ❖ Scale insects
- ❖ Snail/Slugs
- ❖ Red Spider mites
- ❖ Thrips
- ❖ Worms/Caterpillars



Photo by David Rosen.



HOW to Manage Pest & Problems

Environmental

- ❖ Cold damage
- ❖ Etiolation
- ❖ Mechanical/Physical
- ❖ Over-watering



Over-watering
created “water mold”

HOW to Manage Pest & Problems

Environmental

- ❖ Phototoxicity (chemical w/direct hot sun)
- ❖ Pot bound
- ❖ Scorch damage
- ❖ Under-watering



Sun damage



Underwatered
Gymnocalycium friedrichii

HOW to Manage Pest & Problems

Fungus and Other

❖ Fungus:

- Anthracnose
- Black sooty mold
- Black spot
- Grey mold
- Fusarium wilt
- Powdery mildew
- Root (Black stem) & Crown rot



Fungal damage
on Aloe

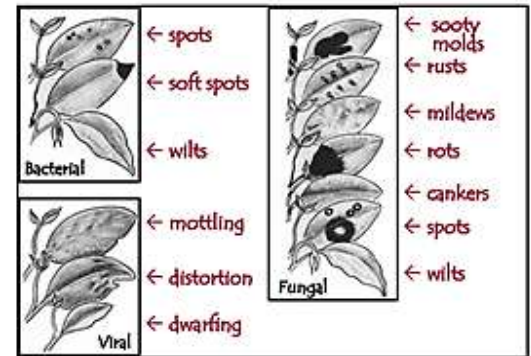


Figure 16

Bacterial diseases cause spots, soft spots, and wilts. The signs of a fungal disease are sooty molds, rusts, mildews, rots, cankers, spots, and wilts. Viral diseases cause mottling, distortion, and dwarfing.

University of
Georgia Extension

Wrap-Up

- ❖ WHO are Master Gardeners?
- ❖ WHO can grow succulents?
- ❖ WHAT are succulents?
- ❖ WHY grow succulents?
- ❖ HOW to grow succulents.
- ❖ HOW to manage pests & problems.
- ❖ HOW to propagate—next session.



Thank You!

Any Questions?

Master Gardener Hotline: **(530) 889-7388**

Rot Line: **(530) 889-7399**

Master Gardener Website: **pcmg.ucanr.org**



UC Master Gardeners of Placer County