University of California Cooperative Extension
Presents:
Citrus Mania
Co-sponsored by:
EDC Master Gardeners and EDC Master Food Preservers
Nov 7, 2015

Presenters:
Phyllis Lee, MG
Michael Pizza, MG/MFP
Phillip Gray, MFP
Citrus Mania Housekeeping Notes

1. Welcome to our class
2. Other MGs and MFPs
3. We are the EDC MGs and MFPs, volunteers trained by the University of California
4. The MG goal: educate our community about research-based home horticulture
5. The MFP goal: educate our community about research-based home food preservation
6. Evaluation form
7. Doorprizes
8. Publications
9. Our timetable/break/snacks/restrooms
10. Donations: support our classes
Today’s Agenda

• Two fold:

1. Teach you the tricks of growing citrus HERE

2. Teach you some tricks about PRESERVING citrus
TIME FOR QUESTIONS

time to share

HELP WANTED
Audience Needs/Questions
Today’s class covers:

- Plant choices for El Dorado County
- Planting and Care
- Pests and Diseases
- Harvesting Citrus
- Storing Citrus
- Preserving and Preparing Citrus
Considerations Prior to Purchase

• Tree size
• Sweetness/taste
• Temperature limitations
• Growing requirements
  – soil, light...
Dwarf rootstock

- Fruiting area
- Containers
Rootstock 101

• Enhances variety with valued characteristics—disease resistance, tree size, ...
Common rootstock for our area:

Trifoliate – cold hardy, rot and nematode resistant

C–35 less cold hardy - faster producer
Rutaceae family
So Many to choose from...

- Kumquat – Fortunella
- Kumquat hybrids (depends) *Citrofortunella*
- Mandarin – C. reticulata
- Limes – C. aurantifolia
- Grapefruit – C. paradisi
- Oranges – C. sinensis
- Lemons - C. limon

What’s best for El Dorado County foothills...
Kumquats
Fukushu and Nagami – Fall to Spring, low 20’s
Nordmann – seedless
Meiwa – Fall to Spring, mid 20’s
Kumquat Hybrids

- Lemonquat - ??

- Variegated Calamondin – sporadiacally through the year, low 20’s

- Indio – winter, mid 20’s
Mandarin

Owari Satsuma
  • Oct. through Jan., mid 20’s

Clementine
  • Dec. – March, 28-30°
  • Requires cross pollination

  • Gold Nugget, late fall, 28°
Lime Bearss
• Fall though Winter, 28°

Key
• Fall, 30-32°

Palestine Sweet
• Fall, 30°
Grapefruit

Oro Blanco and Chandler
• Dec-March, 28-30 degrees

Rio Red
• Feb – June 28-30 degrees
Oranges

Washington navel
• Nov. - April, 28° (holds well)

Moro Blood
• Jan. - April, 28° (off flavor)

Cara Cara
• Dec. – March, 28° (+ lycopene)
Lemon

Meyer or Eureka

- Fall and Spring, 32°
Planting

• Sunny

• Wind free

• Microclimates
Know Your Area – “Everything is Local”
Drainage

• Dig a hole 30” deep
• Fill with water to saturate the soil. The next day refill the hole with water.
• Drainage - OK if water drops 2” in two hours.

OR
Plant in a raised bed or container

• Light, well-drained soil

• 2-3 yr. old into 5 gal. pot

• Drainage holes
Plant in Spring

• Plant root ball high
• First (upper) roots may be visible

• Do NOT allow soil or mulch on trunk
• Fill the basin slowly to soak in
• Water thoroughly: twice weekly (more or less) depending on your soil and climate conditions
Fertilizer

Yellow leaves usually are a lack of **nitrogen** or overly wet roots.

• Complete w/ Trace minerals - NPK
• Citrus/Avocado Food – liquid or solid
Container Citrus

- Slow release or foliar spray
- Needs more frequent application
- Consistent even water – never soggy
Nitrogen Deficiency
Iron

Potassium/Magnesium
Pruning

Remove growth below the graft

Remove fast growing “water sprouts”
Thinning cuts

Heading cuts for shape

Central Leader

Correct

Pruned at Sighting A Year Later Six to Eight Years Later
Espalier
Root Care
• Feeding roots are shallow

Blossom Drop
• Self thinning
Weather
Cold Tolerance

Based on # hrs. @ temp

Container plants

Remove ripe fruit

Cover
• Water plants deeply the day before
• Remove mulch under canopy – bare moist soil radiates
• Wrap young tree trunks with foam wrap, cardboard,...
100 W Heat lamp exterior rated or

Old-school, energy inefficient C7 or larger C9 lights, not LED lights.
Year 2014-15

Kumquats

2 yr. old, row cover only
Sherwood Demo Garden,
Placerville 1,500 ft. elev.

19 yr. old, no cover, no lights
1,200 ft. elev.
Owari Satuma Mandarin

2 yr. old, row cover, Sherwood Demo Garden, Placerville 1,500 ft. elev.

4 yr. old espalier, with row cover & lights 2 nights, 1,200 ft. elev.
Meyer
2 yr. old, with row cover, Sherwood Demo Garden 1,500 ft. elev.

Eureka Lemon
3 yr. old, row cover, lights for two nights, 1,200 ft. elev.
Diseases and Pests
Citrus Red Scale

- Armored body
- All surfaces – leaves, twigs, fruit
- Water blast, hand squash or pick, or oil sprays
Citrus Blast - *Pseudomonas syringae*

- Occurs in cool/wet weather winter-spring
  - Black lesions leaves wither, curl, eventually drop – an entire twig may die
  - Prune out after the rainy period

Prevention: prevent excessive new fall growth - more susceptible
  - Fertilize spring – summer
  - Prune winter – late spring
Whiteflies, Thrips, and Mites

• The “Over” problem: water, fertilizer, pesticides

• Spinosad

• Mites usually only coastal areas
Phytophthora Root Rot
Citrus Leafminer

- Feed on new foliage
- Hardest on young trees
- Foliar effective for 2-3 weeks only
- Systemic? Edible crop!

So...
Decrease “growth flush”
- Trim once yearly
- Don’t apply nitrogen unless needed
Asian Citrus Psylliadiad

Adult – 1/8 “ long, red eyes, tail up

Waxy deposit from nymph

CA Dept of Food/Ag  1-800-491-1899
or EDC MG 530–621-5512
Huanglongbing (HLB) Greening Disease

Irregular mottling

Lopsided “greening” fruit
Bud Mite

- coastal lemons
- think problems in the bud stage
Naval Orange Split

Stressed tree – water and weather
AND... a newcomer

Microcitrus: Australian Finger Lime
Many colors and note the change in the segments!
Resources

http://homeorchard.ucdavis.edu/
Fruits & Nuts/Citrus


CA Dept of Food/Ag  1-800-491-1899  or
EDC MG 530–621-5512
Break for 10 minutes
Harvesting Citrus:

1. Pick when sweet, Dec-May (Valencias-Sum.)
2. Color change = cold weather ≠ sweetness
3. Save on the tree
4. Don’t pick when wet
5. Most twist off, not mandarins or lemons
6. Harvested fruit can last:
   7. 6-8 wks @ 38º
   8. 4-6 wks @ 40º
   9. 3-4 wks @ 48º
10. At 78º or higher, only about a week
Harvesting Citrus and a FREEZE

- Freezing affects the quality
- When fruit freezes, juice sacs break
- Juice seeps out in days = dry fruit

☞ if a severe freeze is predicted, pick!
☞ after a severe freeze, pick all the fruit and use within a few days
Storing Citrus and Ethylene Gas

• Citrus do not produce much ethylene gas

• Citrus ARE affected by ethylene gas
Preserving Your Lemons

• Best NOT to freeze whole lemons
• Freeze the juice
• Suggestion: in measured amounts: cubes, cups
Using your (frozen) lemon juice

Old fashioned lemonade:
• 1 cup of lemon juice
• 4 cups water
• ¾ cup sugar

Variations:
Add pureed (frozen) strawberries, blueberries, blackberries, chopped ginger, mint.
lemon zest
Using Preserved Zest

Make lemon butter (great for most vegetables)

• Whip room temp butter with 1 T lemon zest
• Optional: roll in a log w/parchment paper (store in the refrigerator up to 2 weeks)

Variance: Orange Butter
Preserving Lemon Zest, Orange Zest Lemon Sugar/Orange Sugar

- Just zest one lemon (no white)
- Combine with a cup of sugar
- Store in a canning jar

Use in hot or cold tea
On pancakes, waffles
When making cookies
When making pies
Did I Say NOT to Freeze Whole Citrus?

Exception: Easy/ever-so-decadent SORBET

Just blend 1 part of CONDENSED milk with 5 parts of orange juice (or lemon juice). Then fill the shells and freeze for about 6 hours.
Candied Citrus Peel

These are very habit forming, so you may want to double the recipe to save some for yourself!

- 2 grapefruit or 3 oranges or 6 lemons (or any combination you prefer)
- 2 cups sugar
- 3 Tbsp. light corn syrup
- Water
Candied Citrus Peel

Peel the citrus skin & pith away from the fruit. Scrap pith away. Put the trimmed peel in saucepan, cover with water, simmer 30 mins. Drain, and repeat. Drain & cut the peel into strips ¼ inch wide & 2 inches long. Mix 1 cup sugar, corn syrup and ¾ cup water saucepan; add peel, stir over low heat until the peel is fully saturated with the syrup (about 20 minutes). Cover, let stand overnight. Reheat to a simmer, cool & drain. By small handfuls, put rind into bowl with 1 cup of sugar. Coat pieces well & lay on paper towels inside a cookie sheet. Repeat. Let stand a few hrs. Store in an airtight container for several mos. This recipe makes about 2 cups candied citrus peel.
Candied Citrus Peel
Candied Citrus Peel
Candied Citrus Peel

These little gems are just great to snack on...

A word Caution: once you make these for someone, they’ll never let you stop!
Dry Packing of Citrus Slices
(Nat’l Center for Home Food Preservation)

• Spread pieces of fruit on trays and freeze
• When frozen, place in a canning jar or a 4 ml plastic bag and keep in freezer
Flavored Citrus Vinegars
(from the Nat’l Center of Home Food Preservation)

• Just add the peel of 2 lemons or limes to one quart of vinegar
• Let rest for 3 weeks
• Strain if you like

• Different vinegars produce different effects:
  • White vinegar: clear, sharply acidic
  • Apple cider: much milder
  • Red wine vinegar: might mask the lemon/lime flavors
Lemon Extract

- Small canning jar
- Zest of one lemon
- 1 t sugar
- ½ cup vodka
- Shake daily for a month
- Filter through muslin or a coffee filter
Lemon Salt

• Use regular salt, even better: sea salt flakes
• Just mix one zested lemon with ½ cup salt

• Variance: Lime Salt for ?
Dehydrating Citrus Slices

- Thinly slice lemons, limes or oranges
- Dry in the dehydrator or low oven temp

Use in:
Hot teas
Cold drinks

Or, add a few slices to your rice when cooking it
Grimolata, the Italian secret!

Originally for Oso Buco, but...

Mix together:

- Zest of one lemon
- ½ cup chopped parsley
- 3 cloves of chopped garlic
Limoncello, Bottled Italian Sunshine

- Zest from 10 lemons
- 1 (750-ml) bottle vodka
- 3 1/2 cups water
- 2 1/2 cups sugar

1. Zest 10 lemons (save the lemons!)
2. Pour vodka over the zest in a covered jar or pitcher
3. Let steep for a week at room temperature
4. Dissolve the sugar in the water, medium heat, then cool
5. Pour over the vodka/zest and let sit for a couple of days
6. Strain (optional coffee filter) and then bottle
7. Keep in the refrigerator or freezer.
10 Quick Steps to Lemon/Lime Curd

Source: Ball, freshpreserving.com

- 6 large egg yolks
- ¾ cup sugar
- Grated zest of 1 large lemon or 2 limes
- 1 cup fresh lemon or lime juice (about 5 medium)
- 1 cube unsalted butter cut into pieces
- 2 pint or 4 - ½ pint jars

Mix eggs and then combine with sugar, zest & Juice
Stir constantly over medium heat (15-20 minutes)
Remove from heat and gradually stir in butter pieces
Ladle into jars and with lid and rings
Chill in refrigerator at least 2 hours in jars
Store for 1 week in refrigerator or freeze up to 1 year
ENJOY!
6 Egg Yolks – what the heck is chalazae!
Whisk egg yolks to combine
1 cup fresh or fresh frozen lemon/lime juice
Zest of one lemon/lime – mind your pith!
Whisk together yolks, sugar, lemon/lime juice and zest in saucepan
Stir constantly over medium heat
15-20 minutes
How do you know when it’s done?
Remove from heat and add butter
Ladle curd into jars – mind the headspace
Cool lemon or lime curd and refrigerate or freeze and ENJOY!
Lemon/lime Curd Uses:

- Croissants, muffins, scones or waffles
- Pancakes, crepes or French toast
- Mix with cream cheese and use as a dip
- Fill a tartlet shell and use as a dessert
- Layer with pound cakes
- Fill prebaked pie crust, top w/ whipped cream
- Use as a sauce for ice cream
- Use as a cheesecake topping
- Swirl into cheesecake
- Layer jams and curd into parfait glasses
- Fill a hallowed-out half lemon or lime shell
Today’s Agenda

• Two fold:

1. Teach you the tricks of growing citrus HERE

2. Teach you some tricks about PRESERVING citrus
Recap: Did we meet your needs with today’s class on Citrus?

- Plant choices for El Dorado County
- Planting and Care
- Pests and Diseases
- Harvesting Citrus
- Storing Citrus
- Preserving and Preparing Citrus
Resources and References

*So Easy to Preserve, 5th Edition*
The University of Georgia, Cooperative Extension

Ball: [www.freshpreserving.com](http://www.freshpreserving.com)

National Center for Home Food Preservation
[http://nchfp.uga.edu](http://nchfp.uga.edu)

University of Nebraska, Lincoln Cooperative Extension
[http://extension.unl.edu](http://extension.unl.edu)

Master Gardener Handbook, UC Cooperative Extension
Thank You! Any Questions?

El Dorado County Master Gardeners and Master Food Preservers are here to answer your questions!

Master Gardener Office Hours:
Tues-Friday: 311 Fair Lane
Phone: 530-621-5512

Master Food Preserver Hotline:
Phone: 530-621-5506

Phyllis Lee, MG: leeph1951@gmail.com
Michael Pizza, MG/MFP: MichaelRoyPizza@gmail.com
Phillip Gray MFP: philgray1@gmail.com
Audience Needs/Questions
Today’s Class on Citrus:

• Plant choices for El Dorado County
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• Pests and Diseases

• Harvesting Citrus
• Storing Citrus
• Preserving and Preparing Citrus
Considerations Prior to Purchase

- Tree size
- Sweetness/taste
- Temperature limitations
- Growing requirements
  - soil, light...
Rootstock

- Enhances variety with characteristics—disease resistance, tree size, ...
Why Dwarf?

- Fruiting area
- Containers

Dwarf Rootstock provides size control
Common rootstock:

Trifoliate – cold hardy, rot and nematode resistant

C–35 less cold hardy - faster producer

Local nursery recommendations
And, may allow “tasting”
Rutaceae family
So Many to choose from…

• Kumquat – Citrus fortunella
• Kumquat hybrids – (depends) Citrortunella
• Mandarin – C. reticulata
• Limes – C. aurantifolia
• Grapefruit – C. paradisi
• Oranges – C. sinensis
• Lemons - C. limon

What’s best for El Dorado County foothills...
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Meiwa– Fall to Spring, mid 20’s
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  • Oct. through Jan., mid 20’s

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  • Dec. – March, 28-30°
  • Requires cross pollination

• Gold Nugget, late fall, 28°
Lime

Bearss
• Fall and Winter, 28°

Key
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Palestine Sweet
• Fall, 30°
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Washington navel
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Moro Blood
• Jan. - April, 28° (off flavor)

Cara Cara
• Dec. – March, 28° (+ lycopene)
Lemon
Meyer
• Fall and Spring, 32°

Eureka
• Fall and Spring, 32°
Planting

- Sunny
- Wind free
- Microclimates
Know Your Area – “Everything is Local”
Drainage

• Dig a hole 30” deep
• Fill with water to saturate the soil. The next day refill the hole with water.
• Drainage - OK if water drops 2” in two hours.

OR
Plant in a raised bed or container

- Light, well-drained

- 2-3 yr. old into 5 gal. pot

- Drainage holes
• Plant in Spring
• Plant root ball high
• First (upper) roots may be visible

• Do NOT allow soil or mulch on trunk
• Fill the basin slowly to soak in
• Water (thoroughly), weekly, more or less depending on your soil and climate conditions
Fertilizer

• Complete w/ Trace minerals - NPK
• Citrus and Avocado Food
• Water soluble fertilizer can be used

• Yellow leaves usually = lack of fertilizer or overly wet roots.
Container Citrus

• Slow release or foliar spray
• May need more frequent application
• Consistent even water – never soggy
Nitrogen Deficiency
Iron

Potassium/Magnesium
Pruning

Remove growth below the graft

Remove fast growing “water sprouts”
Heading cuts for shape

Thinning cuts
Espalier
Root Care
• Feeding roots are shallow

Blossom Drop
• Self thinning
Weather
Cold Tolerance

Based on # hrs. @ temp

Container plants

Remove ripe fruit

Frost blankets
• Water plants deeply the day before
• Remove mulch under canopy – bare moist soil radiates
• Wrap trunk with foam wrap, cardboard,...
100 W Heat lamp exterior rated or

Old-school, energy inefficient C7 or larger C9 lights, not LED lights.
Year 2014-15

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2 yr. old, with row cover, Sherwood Demo Garden
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Eureka Lemon

3 yr. old, row cover, lights for two nights, 1,200 ft. elev.
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Citrus Red Scale

- Armored body
- All surfaces – leaves, twigs, fruit
- Water blast, hand squash or pick, or oil sprays
Citrus Blast - *Pseudomonas syringae*

- Occurs in cool/wet weather winter-spring
  - Black lesions leaves wither, curl, eventually drop – an entire twig may die
  - Prune out after the rainy period

Prevention: prevent excessive new fall growth - more susceptible
- Fertilize spring – summer
- Prune winter – late spring
Whiteflies, Thrips, and Mites

• The “Over” problem:
  • water, fertilizer, pesticides
  • Spinosad

• Mites usually only a problem in coastal areas
Phytophthora Root Rot
Citrus Leafminer

- Feed on new foliage
- Hardest on young trees
- Foliar effective for 2-3 weeks only
- Systemic? Edible crop!

So...
Decrease “growth flush”
- Trim once yearly
- Don’t apply nitrogen unless needed

Adult – 2mm long
Asian Citrus Psylliadiad

Adult – 1/8 “ long, red eyes, tail up

Waxy deposit from nymph

CA Dept of Food/Ag  1-800-491-1899
or EDC MG 530-621-5512
Huanglongbing (HLB) Greening Disease

Irregular mottling

Lopsided “greening” fruit
A Few other...

- coastal lemons
- think problems in the bud stage
And...

Naval Orange Split

Stressed tree – water and weather
Resources

http://homeorchard.ucdavis.edu/Fruits_&_Nuts/Citrus


CA Dept of Food/Ag  1-800-491-1899  or  EDC MG 530–621–5512
1. Harvesting Citrus
2. Storage Time on Citrus
3. What if the citrus freezes on the tree?
4. Preserving (freezing) lemon juice
5. Using your preserved (frozen) lemon juice
6. Zest
7. Orange Sorbet or Lemon Sorbet
8. Lemon Sugar/Orange Sugar
9. Freezing Citrus Slices
10. Citrus Vinegars
11. Lemon Extract
12. Lemon Salt
13. Lemon Olive Oil
14. Dehydrating Citrus Slices
15. Italian Grimolata
16. Italian Limoncello
17. Phil’s Demo: Lemon or Lime Curd
Candied Lemon Peel
Using your (frozen) lemon juice and lemon zest to make:

Lemon Curd (Ball canning book)

- 6 large egg yolks
- 3/4 cup sugar (superfine*)
- Grated zest of one large lemon
- 1 cup fresh/frozen lemon juice (about 5 medium)
- 2 cubes unsalted butter, cut into 8 pieces
- (1 qt canning jar)

Mix eggs and then combine with sugar, zest, juice
Stir constantly on low heat until thick (15-20 min)
Remove from heat and then stir in butter a piece at a time
Chill in refrigerator for at least 2 hours in a qt canning jar
Use an ice cream scoop to serve in hallowed-out lemon shell!
More lemon curd uses:

- croissants, muffins, scones or waffles.
- pancakes, crepes or French toast
- Mix with cream cheese and use as a dip
- Glaze for cakes
- Fill a tartlet shell and use as a dessert
- Layer pound cakes
- Fill prebaked piecrust, top w/whipped cream
- Use as a sauce for ice cream
- Use as a cheesecake topping
- Swirl into cheesecake
- Layer jams and curd into parfait glasses
Lemon Lowdown

- Store: Eureka and Lisbon

- Backyard: Meyer (Eureka/Lisbon x Mandarin or an Orange)
Freezing Citrus Segments in Syrup
(from the Nat’l Center of Home Food Preservation)

• Peel the fruit
• Divide into sections
• Remove most membranes and seeds
• Cover with a 40% syrup pack and freeze

Details:
• 40% syrup pack = dissolve 2 ¾ C sugar in 4 cups of warm water. Chill
• Place fruit in canning jars. Fill with syrup to one inch **below rim**
• Squash segments UNDER the syrup with crumpled parchment
• Lid jars and freeze upright

Can you water bath (can) citrus?
Freezing Citrus Segments by Sugar Packing
(Nat’l Center for Home Food Preserving)

In a qt canning jar:

• Layer the fruit and sugar to taste until juice is drawn out (15 minutes+)  
• Fill to one inch below rim of a canning jar.  
• Freeze jars
Preserving (freezing) your lemons

- Put lemons slices in trays and freeze them
- Use them in drinks and also for cooking
Make your Dry Citrus Rub for Meats

2 Tablespoons dried Citrus Zest
2 Tablespoons Salt
2 Tablespoon Dark Brown Sugar
2 Tablespoon Cumin
1 Tablespoon Paprika
1 Tablespoon Garlic
1 Tablespoon diced dry Onion
1 teaspoon Cayenne Pepper
1 teaspoon White Pepper
1 teaspoon ground Sage
1 teaspoon ground Thyme