

# Growing Tree Fruits for the Home Garden

Steve Renquist  
Douglas County



## Topics to be Discussed

- Site selection
- Varieties
- Pollination
- Rootstocks
- Planting
- Fertilization
- Irrigation
- Fruit thinning
- Pruning
- Pest controls



## Growing tree fruit

Site Selection

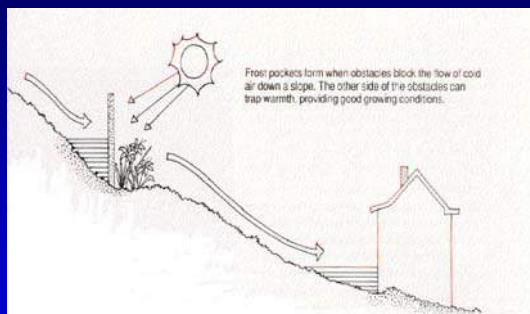


## Site selection

- Plant Zone 6, 7, or 8
- good for deciduous tree fruit
- Eight hours of sun
- Some elevation-fights frost
- Slope direction influence bud break
- Need a water source
- Well drained soil best



## Frost Pockets & Warm Spots



## Site Selection-Soil

- Tolerance to waterlogging
- Pear- very tolerant
- Apple-tolerant (except M26, MM106)
- Plum- tolerant
- Peach- sensitive
- Apricot- very sensitive
- Cherry- very sensitive



## Growing tree fruits

### Varieties

## Varieties best suited for home orchards

- Apple
  - Scab resistant
  - Mildew resistant
- Pear
  - Fireblight resistant
- Cherry
  - Self fertile
- Persimmon
  - Insect and disease hardy
- Fig
  - Cold hardy varieties
  - Drought hardy

## Scab-resistant apple varieties

- Early ripening-
  - Pristine
  - Dayton
  - Chehalis
- Mid-/ early late
  - Liberty
  - Prima
- Late
  - Goldrush

Liberty



Pristine



Prima



Chehalis



## Leading Varieties

- Gala
- Honeycrisp
- Golden Delicious
- Red Delicious
- Cameo
- Braeburn
- Fuji
- Jonagold

Braeburn



Gala



Honeycrisp



Cameo



Jonagold



Fuji



## Old and New Varieties



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## Old Favorites

- Gravenstein
- Jonathan
- Elstar
- Cox's Orange
- Arkansas Black
- Northern Spy
- Winesap
- Spitzenberg
- Ida red
- Newtown Pippin

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Arkansas Black



Jonathan



Spitzenberg



Cox Orange



Newtown Pippin



Northern Spy



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## Standard pear varieties

### Big four-

- Bartlett (Summer\*)
- D'Anjou (Winter\*\*)
- Bosc (Winter\*\*)
- Comice (Winter\*\*)

\*Summer- will ripen after harvest

\*\*Winter- requires chilling to ripen normally

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Comice



Yellow Bartlett



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Bosc



D'Anjou



## Fireblight resistant pears varieties

- Harrow Delight-summer
- Harvest Queen-summer
- Magness-summer

## Peach Varieties for Western Oregon

- Favorites
- Sunhaven
- Redhaven
- Suncrest
- Veteran
- O'Henry
- Improved Elberta
- Leaf curl resistant
- Frost
- Oregon Curl Free
- Clayton
- Muir
- Krummel

Red Haven



O'Henry



Frost



Elberta



Veteran



## Plum and Prune Varieties

- Plums- (Japanese)
- Shiro-yellow
- Santa Rosa- red
- Satsuma-red
- Beauty- red
- Elephant Heart-red
- Prunes-(European)
- Green gage-green
- Stanley-blue
- Italian- purple
- Brooks- blue
- Moyer- purple

Shiro Plum



Satsuma Plum



Santa Rosa Plum



Italian Prune



Brooks Prune



## Cherry Varieties

- |              |               |
|--------------|---------------|
| OLD          | NEW           |
| • Chelan     | • Sonata      |
| • Cristalina | • Stella      |
| • Royal Anne | • Lapin       |
| • Bing       | • Skeena      |
| • Rainier    | • Sweetheart  |
| • Regina     | • Sandra Rose |



## Growing tree fruit

Pollination

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## Pollination

- Tree fruit crops
  - insect pollinated
    - honey bees (20%)
    - mason bees and
    - misc. bees (80%)
- Nut crops
  - wind-pollinated

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## Honeybee Hazard of Pesticides

Pesticide	Active In.	Bee hazard
• Entrust	spinosad	X
• Cyd-X	gran. virus	none
• Sevin	carbaryl	XXX
• Malathion	malathion	XXX
• Mineral oil	oil	X
• Surround	clay	none
• Lime sulfur	calcium poly	none

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## Pollination

Definitions:  
 Pollination = the transfer of pollen to the receptive part of the female flower.  
 Pollinator = the agent of pollen transfer (bees, flies, etc.).  
 Pollinizer = the source of the pollen.

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## Pollinizers

• Apple <ul style="list-style-type: none"> <li>– another variety</li> <li>– crabapple</li> </ul>	• Peach <ul style="list-style-type: none"> <li>– self-fertile</li> </ul>
• Pear <ul style="list-style-type: none"> <li>– Bartlett</li> </ul>	• Prune plum <ul style="list-style-type: none"> <li>– 'Italian' benefits from another var.</li> </ul>
• Cherry <ul style="list-style-type: none"> <li>– discussed later</li> </ul>	• Oriental plum <ul style="list-style-type: none"> <li>– needed</li> </ul>
• Fig <ul style="list-style-type: none"> <li>– not needed</li> </ul>	• Persimmon <ul style="list-style-type: none"> <li>– not needed</li> </ul>

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## Apple Pollinizer Chart

	Lodi	Prima	Jonathan	Jonafree	Honeycrisp	Liberty	Empire	Red Delicious	Jonagold	Golden Delicious	Enterprise	Mutsu (Crispin)	GoldRush	Winesap	Fuji	Granny Smith	Arkansas Black	Red York	Rome Beauty	
Lodi																				
Prima																				
Jonathan																				
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## Cherry Pollinizers

- Bing- Van or Corum
- Chelan- Bing, Van or Rainier
- Cristalina- Sandra Rose, Lapins
- Royal Ann- Corum

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## Self Fertile Varieties

- Sandra Rose
- Sonata
- Stella
- Lapins
- Skeena
- Sweetheart
- Staccato

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## Growing tree fruits

Rootstocks and dwarfing mechanisms

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## Why dwarf trees?

- Safer- little to no ladder work
  - pruning/training
  - harvesting
  - spraying
- Begin flowering earlier (precocious)
- Bear earlier
- More productive
- Less pruning

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## What fruit trees can be dwarfed?

- Significant dwarfing
  - Apple- 4-6'
  - Cherry- 8+
  - Peach- 8+
- Slight dwarfing
  - Pear- 10+
  - Plum- 8+

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## Goal




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## How do you dwarf fruit trees?

- Dwarfing rootstocks
  - genetically different root system
  - variety is budded/grafted onto a rootstock
    - not true from seed
    - varieties are difficult to root
    - not dwarfing


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## Grafting

Scion



Rootstock




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## Growing tree fruits

### Planting systems


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### Planting

- ✓ Deciduous fruit trees planted bare-root.
- ✓ Planting holes dug wide.
- ✓ Do not glaze the sides of the planting hole.
- ✓ Broken or damaged roots trimmed off.

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### Planting

- ✓ Trees planted with graft union above soil line.
- ✓ Trunks painted with white interior latex paint (can be diluted with water 1:1).
- ✓ Water trees in.
- ✓ Prune off top at desired height to encourage branching.
- ✓ Don't put fertilizer in hole or around tree base until 2<sup>nd</sup> yr.

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## Pruning after planting

- Central leader training
- If not branched, head the tree at ~30"
- Allow 4-5 lateral branches to develop (not all from the same location on the trunk)



## Training Trees

## Spacing

- Dwarf
  - 6-8 foot spacing
- Semi-dwarf
  - 10-15 ft spacing
- Standard
  - 18-25 ft. spacing

## Growing tree fruits

### Fertilization

## Accumulated Dry Matter

- Six year old Gala trees on M26 roots
- Tree accumulates 10 lbs. DM per year
- 72% to fruit
- 17% to shoots and leaves
- 11% to trunk and roots

## Fertilization

- Apply nitrogen fertilizer during growing season. (April/May)  
.5 lb. per tree actual N for trees 1-8
- Early season application will promote growth in current season.
- Aug-Sep application will be stored in buds for flowers-fruit during following season. Foliar 1lb. urea for 4 gallons of water



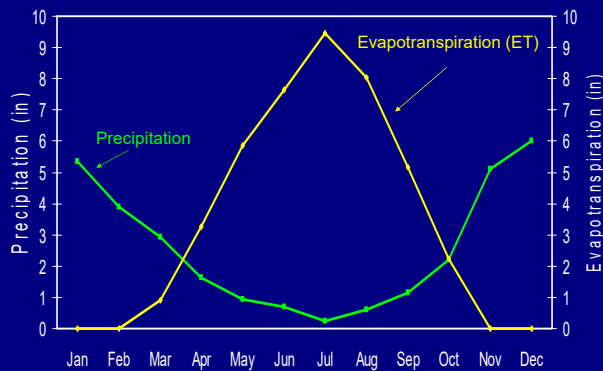
## Fertilization-pH

- Young trees should grow 18-30 inches
- Older trees should grow 12-18 inches
- pH of 6-7 good, lime every third year

## Growing tree fruits

Irrigation

## Irrigation



## Irrigation Needs (inches/week)

	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov
<u>Roseburg</u>									
Apples, Cherries	0.0	0.4	1.0	1.5	1.9	1.6	0.9	0.0	0.0
Pears, Plums	0.0	0.3	0.9	1.3	1.8	1.4	0.8	0.0	0.0
<u>Grants Pass</u>									
Apples, Cherries	0.3	0.9	1.5	1.9	2.3	1.9	1.3	0.5	0.0
Pears, Plums	0.3	0.8	1.4	1.7	2.1	1.8	1.1	0.4	0.0

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## Growing tree fruits

Fruit thinning

## Why do we thin fruit?

- Fruit size
  - apple, pear, peach, plum
- Return bloom
  - mostly in apple
- Prevent limb breakage
- Distance
  - at least 6" (fist with extended thumb)
  - < 25% of the crop in apple and peach

## Fruit Thinning-Heavy Set



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## Fruit Thinning Each Cluster



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## Thin to Singles



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## Fruit thinning

- Apple < 40 days after full bloom  
1 fruit / 2 spurs
- Pears < 60 days after full bloom  
1 fruit/ 2 spurs
- Peaches <60 days after full bloom  
6" to 10" apart

## Growing tree fruits

Pruning

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## Why Prune?

- Balance vegetative growth and flowering-fruiting
- Pruning + nitrogen = vigor, unfruitful, large fruit
- No pruning + heavy crop load = weak trees, small fruit size

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## Pruning

- Heading back cuts
  - invigorating
  - lateral buds break
  - increases branching
- Thinning out cuts
  - branch collars
  - equal but opposite
  - stimulate apical shoot elongation
  - reduce branch number

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## Training Systems – Central Leader



## Super Spindle System



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## Bibaum System (Double Axis)



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## Open Center Vase



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## Open Center Vase (old)



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## Growing tree fruits

Pests and control

## Diseases

Apple scab



Fireblight



## Codling Moth – Apple and Pear Pest



## Voiles



Organic **does not** mean pesticide free

Type of pesticide used

- Low toxicity
- Short residual

## Pest control

- Sanitation, sanitation, sanitation!!!!
  - Remove **all** fruit before winter
  - Cut out cankers/dead wood
  - If bad scab year, rake up leaves and compost
  - Prune for good air movement
  - Plant disease resistant varieties



## Apple pest control

- Fall or Winter
  - Anthracnose- fixed copper
  - Scale, aphids and mite eggs- dormant oil
  - Scab- lime sulfur
- Delayed Dormant stage
  - Scab and mildew- lime sulfur and sulfur
  - Shothole borer- needle and pyrethrum
- Post-bloom
  - Scab and mildew- sulfur captan immunox

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## Apple pest control

- Summer to harvest
  - Codling moth-
    - Trap to determine emergence- 3 flights
    - Horticultural oils (~3-4 weeks after bloom-apply every 5-7 days for 4-5 weeks)
    - Cyd-X virus
    - Surround
    - Spinosad
  - Mites, scale and aphids -
    - Horticultural oils
    - Insecticidal soaps

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## Pear pest control

- Similar to apple
- Bacterial canker (*Pseudomonas*) prune during dry season, fall copper spray, following spring frost.
- Fireblight-
  - Pruning
  - Copper sulfate and oil, Bordeaux

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## Cherry pest control

- Bacterial canker (*Pseudomonas*)-
  - Pruning in dry season, summer or fall
- Blossom blight and brown rot
  - Pruning
  - Fixed copper during bloom
  - Sulfur, post-bloom
  - Remove rotten fruit

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## Peach Pest Control

- Peach leaf curl
  - 3 dormant copper & lime-sulfur sprays
  - Nov, Jan or Feb, pre bud break
- Coryneum blight- (shothole) fall copper
- Brown rot- pre bud break sulfur and mid summer to harvest sulfur

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## Backpack Sprayer Best



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## R.E.I and P.H.I.

• Pesticide	R.E.I.	P.H.I.
• Spinosad	4 hr.	7 day
• Sevin	12 hr.	3 day
• Cyd-X	4 hr.	none
• Immunox	1 day	14 day
• Sulfur	1 day	1 day
• Lime sulfur	2 day	7 day
• Hort oil	4 hr.	none
• Malathion	12 hr	3 day

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## Still Need a Ladder



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## Use Resistant Varieties



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## More Information

- <http://www.extension.org/apples>
- <http://extension.oregonstate.edu/douglas/horticulture>

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