Pruning Ornamental and Fruit Trees

Gardeners’ Gathering
Mar. 3, 2012

Chuck Ingels
UC Cooperative Extension, Sacramento County
http://cesacramento.ucdavis.edu

Many ornamental tree slides courtesy of
Larry Costello, former UCCE advisor
Reasons for Training Young Landscape Trees

- Improve structural strength
- Reduce maintenance
- Increase tree longevity

These also apply to fruit trees
Reasons for Training Young Fruit Trees

- Create light penetration in lower tree
- Support crop load
- Create access for ladder work, fruit thinning, harvesting, etc.
# Landscape vs. Fruit & Nut Trees

## Differences

### Landscape Trees
- Taller trees
- Central leader training
- First branch higher
- Mostly winter pruning
- Few if any heading cuts
- Branch spreaders rarely used

### Fruit & Nut Trees
- Shorter trees
- Many training methods
- First branch lower
- Winter, summer pruning
- Some heading cuts
- Branch spreaders common
Landscape vs. Fruit & Nut Trees

Similarities

- Branches carry heavy load
  - Length vs. fruit load
- No narrow branch (crotch) angles
- Proper pruning cuts for wound closure
- May require support
  - Cabling vs. rope or stake
Landscape Tree Training

Effects of Improper Pruning on Mature Trees
Effects of Poor Training
Narrow Branch Angle

Bark Inclusion

Narrow
Wide
Effects of Poor Training
Narrow Branch Angle
Effects of Poor Training
Narrow Branch Angle
Young Tree Training
The 5 Steps

- Remove broken, dead, diseased, or damaged branches
- Select and establish a central leader
Establish a Strong Leader
Avoid Co-Dominant Leaders
Young Tree Training
The 5 Steps

- Remove broken, dead, diseased, or damaged branches
- Select and establish a central leader
- Select and establish the lowest permanent branch (LPB)
Young Tree Training
The 5 Steps

- Remove broken, dead, diseased, or damaged branches
- Select and establish a central leader
- Select and establish the lowest permanent branch (LPB)
- Select and establish scaffold branches
Young Tree Training
The 5 Steps

1. Remove broken, dead, diseased, or damaged branches
2. Select and establish a central leader
3. Select and establish the lowest permanent branch (LPB)
4. Select and establish scaffold branches
5. Select temporary branches below LPB
Basic Pruning Cuts
Heading Cut

- Removal of part of branch or shoot
- Used to promote branch development, especially on young trees
- Stimulates growth just below cuts
- Can reduce sunlight penetration
Thinning Cut

- Removal of entire branch or shoot, or back to a branch >1/3 the thickness of cut branch
- Used to prevent crowding and improve sunlight penetration
- Defines main branches
Large Pruning Cuts
Important Branch Growths

Branch bark ridge

Branch collar
Making Large Pruning Cuts

Diagram showing the anatomy of a tree branch, including dead branches, living branches, branch collars, and bark ridges.
Making a Proper Cut
Cutting Off a Branch with No Collar
Proper Cuts, Wounds Closing
Insufficient Wound Closure from Improper Cuts

Too Long

Too Short

Split Bark
Good Wound Closure, But Cut Too Big
Effects of Topping
Branches from Outer Buds
Not Well Attached
Training and Pruning Fruit Trees
What it’s all about
Post-Planting Care

- Head tree at 18-36 in.
- Cut back well-placed laterals to 3-8 in., remove all others
- Paint trunk white
  - Interior latex paint & water, 50:50
  - Entire trunk & 2 in. below soil
  - Prevents sunburn & borers
Pruning a Bare-Root Tree

Branches thinner than 3/16

Branches thicker than 3/16
New Shoots on Branches of Newly Planted Tree
Paint Trunks White
(Hot Climates, Afternoon Sun on Trunk)
Summer Pruning
Summer Pruning of Young Trees

- **Purpose:** promote scaffold branches
- **Head unwanted shoots to 4-6 in.**
- **Pinch 2 ft. long scaffold branches to promote side branching**
- **Reduces training time, shortens time to first fruit production**
Summer Pruning for Training
(Open Center)

Before

After
Summer Pruning of Mature Trees

- **Purpose:** To increase sunlight & productivity of lower fruiting wood
- **Remove unwanted vigorous, upright shoots 1-3 times during season**
- **Bring down tree height**
- **Large branches may sunburn if pruning is excessive**
Summer Pruning (Plum)

Before

After
Specific Fruit & Nut Tree Training Methods

- Open center
- Central leader
- Fruit bush
- Espalier
Open Center

- Most common method
- Stone fruits and almonds; can also use for apples, pears, figs, persimmons
- Select scaffolds during first 2 growing seasons, touch up in dormant season
- Keep center open during summer from the start
Open Center

Stake branches outward if necessary (cherry)

Radial separation of scaffold branches (apricot)
Must have Vertical Branch Separation, Wide Crotch Angles
Specific Fruit & Nut Tree Training Methods

• Open center
   Pruning stone fruits
   ➢ Peach/Nectarine
Peach/Nectarine Fruiting Branches (Bear on long, 1-yr.-old wood)
Pruning a One-Year-Old Peach
Pruning a Two-Year-Old Peach
Pruned Three-Year-Old Peach
Pruning a Mature Peach
Tying Open Center Peach Tree
Cut back 2-year-old branches to healthy 1-year-old branches
Prune Apricots in August to Avoid Eutypa Dieback
Specific Fruit & Nut Tree Training Methods

• Open center
• **Central leader**
• Fruit bush
• Espalier
Central Leader Apple
(Genetic Dwarf)
Central Leader

- Used for apples, pears, Asian pears
- Maintain leader, remove at certain height
- Tie or stake lateral branches outward
- Create 3-4 whorls of branches
- Branches offset from those below
Central Leader Training
Spread Shoots When Young
Ideal tree shape & branch spread from regular maintenance pruning

Robert Stebbins 1976
Specific Fruit & Nut Tree Training Methods

- Open center
- Central leader
- **Fruit bush**
- Espalier
Fruit Bushes Kept at Desired Height
Fruit Bushes
Pruning – Years 1 & 2

• At planting, head trees to 18-24 in.
• Mid-spring – cut back new growth by half
• Mid-summer – cut subsequent growth back by half
• Thinning cuts for sunlight penetration
• May need to prune 1-2 more times
Cutting New Shoots in Half
Mid-Summer
Fruit Bushes
Pruning Mature Trees

- Cut back new growth above selected tree height 2-3 times during growing season
- Thinning cuts for sunlight penetration
Mature Fruit Bush
Maintaining Tree Height

Before

After
Cherry, Pome Fruits Ideal for Fruit Bush
Apricots and Plum Fruit Bush
Excessive Growth
Apricots and Plum Fruit Bush
Excessive Growth

Before

After
Fruit Bushes

- **Advantages**
  - Tree maintenance without ladder
  - Trees for small spaces
  - Sequential ripening

- **Disadvantages**
  - Less fruit
  - No shade
  - Timing of pruning critical
Specific Fruit & Nut Tree Training Methods

- Open center
- Central leader
- Fruit bush
- Espalier
Espalier
Angle Shoots Upward Initially
Espalier Pruning
Growing Season

Growth on lower arms tends often to be less vigorous than on top tier

Basal third of new shoots has ripened
Dormant Pruning

Before

After
Espalier
Menorah Shape
Questions?
What to Do About Overgrown Trees
Methods of Reducing Height of Large Trees

1. Cut to desired height in thirds over 3 years
   - Thin upright shoots in summer to provide light for lower fruiting wood
Methods of Reducing Height of Large Trees

1. Cut to desired height in thirds over 3 years
   - Thin upright shoots in summer to provide light for lower fruiting wood

2. Bring down height in one year
   - Saw off limbs well below desired height
   - Leave one “nurse” limb to feed roots
   - Thin new shoots, train tree as desired
   - Paint exposed limbs white
Pruning Overgrown Apple – One Year
Regrowth
Weeks Later
Regrowth That Summer
Severe Topping Won’t Always Work
Specific Fruit & Nut Tree Training Methods

- Open center
- Central leader
- **Modified central leader**
- Fruit bush
- Espalier
Modified Central Leader

- Walnuts & persimmons; can also use for apples, pears, and figs
- Start tree as central leader, then cut out the leader part way up
- Shorter leader = delayed open center
Specific Fruit & Nut Tree Training Methods

• Modified Central Leader

Pruning different species

➤ Walnut

➤ Pecan

➤ Persimmon
Persimmon

- Bears laterally on current season’s growth
- Terminal & first few lateral buds on 1-year-old branches are mixed
  » Both male & female flowers
Persimmon Bearing Habit

- Shoot in Winter
- Mixed buds
- Vegetative buds

- Following Summer
- Bearing shoot
- Fruit
Persimmon Fruitful Shoots at Tips of 1-Year-Old Branches
Training Young Persimmons

- Modified central leader
- 3 - 5 main scaffolds
  - 1 foot intervals
  - 1st & 2nd year can pinch shoots to promote branching.
- Head branch ends you want to keep growing into scaffolds.
Unheaded Branches on Young Trees – Lost Scaffold Branches, Sunburn
Pruning Mature Persimmons

- Dormant, annual pruning
- Primarily small cuts
- Thin out to invigorate and increase fruit size
Before

Mature Tree –
Mod. Central Leader

After