

This is to be an interactive presentation; questions/ comments are invited at any time.

Survey: what are your interests, issues and concerns.

As the title states we will be discussing deciduous fruit trees.

We will stress both winter (dormant) and summer (late spring) pruning.

Also we will stress controlling the size of the tree.

## ACKNOWLEDGEMENTS

Prof. Ted DeJong UC Davis Plant Sciences  
Department; Pomologist , Plant Physiologist.

Kevin Day UCCE Farm Advisor Tulare County.

Robin Cleveland, EDC UCCE Editorial Assistance.

Kathy Hall, Photography.

Pam Lane MG.

Much of the “hands on” suggestions are from Ted and Kevin. From both trainings and field demonstrations.

# Key Questions

WHY?

WHEN?

WHERE?

Guides to how we achieve our goals.

Why:

For development and maintenance

Priority- fruit production which requires healthy and strong trees

-which will achieve aesthetic values

-initial training

-maintenance and renewal

When:

-determined by goal of pruning

Where:

-determined by goal of pruning

How we achieve our goals by understanding how trees grow; what processes direct their growth.

## How we achieve our goal

Understanding the Physiology of the tree:

Basic Physiology - Photosynthesis

Apical Dominance

Seasonal Growth Cycle

Key Concept: "Light Management"

Our Goal: Large Tasty Fruit



Elberta Peaches:  $\frac{3}{4}$  - 1 pound fruit.

The tree is a subject of remedial pruning. (More on that later.)

# WHY

FOR HEALTH OF TREE.

TO STRENGTHEN THE TREE:

Structure and Shape.

TO INCREASE PRODUCTIVITY:

Develop Fruitwood.

TO CONTROL SIZE OF TREE:

So the tree can be "tended" efficiently.

Discuss training systems – the plan for the tree

Emphasize Light Management

Health – removal of dead, diseased or injury causing branches

Strength – support canopy the source of light energy

- support fruit load

Productivity – develop and maintain fruit wood

- maintain good "light management"

Size – control size so tree can be "TENDED" efficiently

Define "To Tend" a tree: prune, spray, thin fruit (reduce fruit load), net and harvest.

# **WHEN**

## **Seasonal Growth Cycle**

Dictates when to:

- train or shape tree,
- best protect the tree.

## WHEN Overview

Dormant Season:

-not too early to February/March.

Summer (Late Spring) Pruning.

Other Considerations.

Note: Every cut wounds the tree!

This is a general rule subject to seasonal variations.

Pruning can be done at other times BUT it might increase the risk of harm.

On summer pruning, discuss the “grand period of growth”.

NOTE: dormant pruning tends to invigorate/summer pruning tends to devigorate.

With dormant pruning, thinning cuts tend to produce relatively more fruitwood, heading cuts more vegetative growth

Summer pruning develops more lateral branching which leads to more fruitwood. Controls light energy to fruit without harm to tree avoiding sunburn.

Ref. Fig 2.12 “The Home Orchard” on growth cycle

DeJong talks of dormant pruning in the fall as long as there will be no new growth: late September or October

\* Trees may be pruned as they push. This may be used as a method of thinning fruit.



## WHEN Other Considerations

### Disease Avoidance:

- Apricots and Cherries in August ,
- Stone Fruit in very late winter.

### Reducing Fruit Load:

- Early spring at bloom or fruitlet development.

Disease avoidance was stressed by DeJong.

Both Day and DeJong mentioned reducing the fruit load (thinning).

## When & Where

Have a Plan:

to train, shape, remedial prune.

Patience.

Permit development of structure for  
year(s) before permanent branch  
removal.

Permit multiple branches to grow into one area. After a year or two pick the best (most appropriate for desired shape), then make a permanent removal of excess branch(s).

## WHERE

Purpose of Pruning:

Initial Training (1 – 3 yrs).

Subsequent Shaping.

Goal of Pruning:

- Fruitwood,

- Vegetative Growth.

Where: focuses on which particular branch and at what location on that branch

Training applies to first years of growth (1 – 3)

Pruning thereafter

Training develops support structure ( primary and secondary scaffolds)

Shaping develops the final exterior shape (selected by the grower) and maintains it.

## WHERE Individual Branch

Evaluate Tree – Think Light Management.

Determine overall plan for pruning:

Consider spacing of branches,  
vertically and horizontally

(depending on tree's training system).

Rule of 3 (more later in sequence).

Age of Tree.

Spacing returns us to “Light Management” considerations.

Spacing vertically is driven by the planned shape of the tree; 12” – 24”.

Spacing horizontally is determined by avoidance of shading lower branches.

Age of tree: younger trees – lightly: Mature trees heavily (bigger) branches. (Day)

# SAFETY

First Consideration!!!  
Eye protection  
Hand & Arm Protection  
Avoid ladders or  
Use Orchard Ladder

Stress initial planning for tree to develop tree close to ground so it can be TENDED with feet on the ground.

Stress sharp tools which require less strength, are less tiring, and help tree protect itself.

## PRUNING ALERT

Every cut wounds the tree.

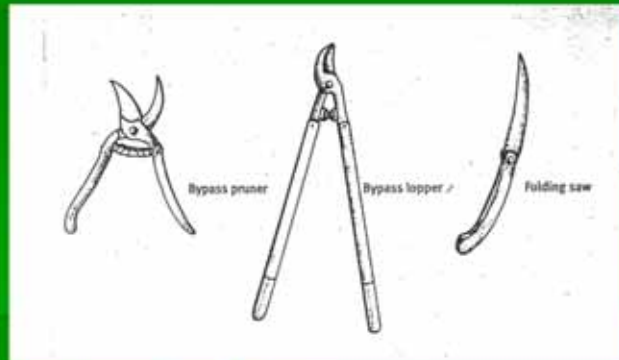
Give the tree the best chance to protect itself.

When: considers giving the tree the best chance to protect itself, avoid pest damage.

More on this later BUT emphasize the need for sharp tools (the next subject).

Discuss “compartmentalization” by tree later.

## TOOLS (sharp!)



Vine Lopper, Pole Pruner

Ladder (orchard)

Glasses, Gloves

Sharpening tools: files, stones

Insert overhead. Discuss bypass aspect of shear.

Add and discuss vine lopper, pole pruner, both saw and shear aspect.

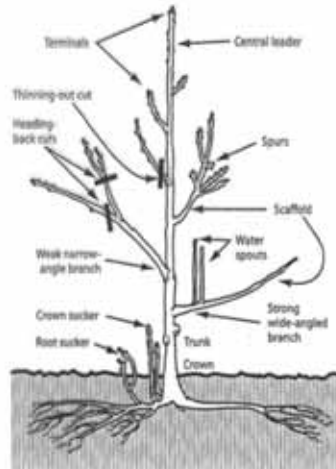
Bring up orchard ladder again.

Reemphasize training lower trees so ladders are not required.

Display shears; discuss by-pass and anvil shears

# PRUNING Fruit Tree Anatomy

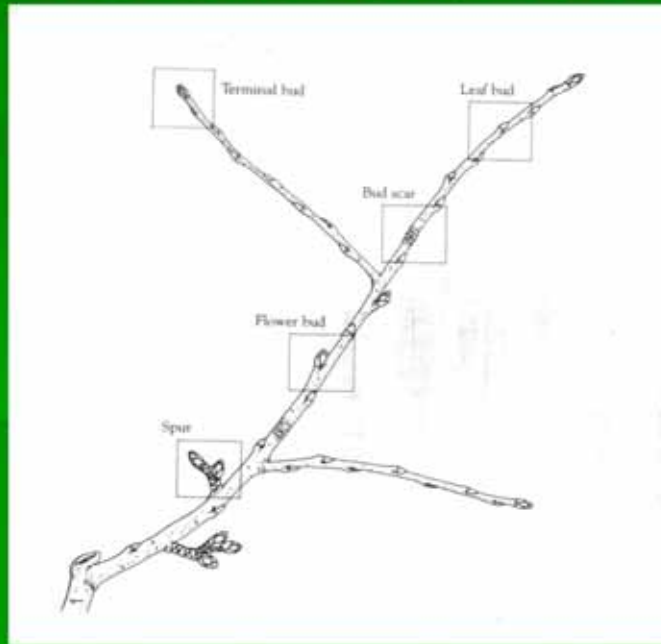
Figure 17-13  
Fruit tree framework terms. Source: After Westwood 1993, p. 204.



Discuss tree configuration, scaffolds, branches and buds  
Terms to be used in pruning process.  
Define “shoot” – one year growth



## Branches and Buds



Buds need to be identified so appropriate (correct) choices are made.

## More on Buds

### PARTS OF THE BRANCH

**Terminal Bud:** The fat bud at a branch tip will always grow first and fastest if you leave it. Cut it, and several buds will grow behind it.



**Leaf Bud:** Flattish triangle on the side of a branch. To make one grow, cut just above it. Choose buds pointing outward from the trunk so the growing branch will have space and light.



**Flower Bud:** Plump compared to leaf buds and first to swell in spring. On stone fruits they grow alone or beside leaf buds. On apples and pears they grow with a few leaves.



**Spurs:** Twigs on apples, pears, plums, and apricots. They grow on older branches, produce fat flower buds, then fruit. Don't remove them.



**Bud Scar:** A ring on a branch that marks the point where the terminal bud began growing after the dormant season. The line marks the origin of this year's growth.



### Adventitious Buds (under bark)

Terminal bud-tree physiological action of hormones

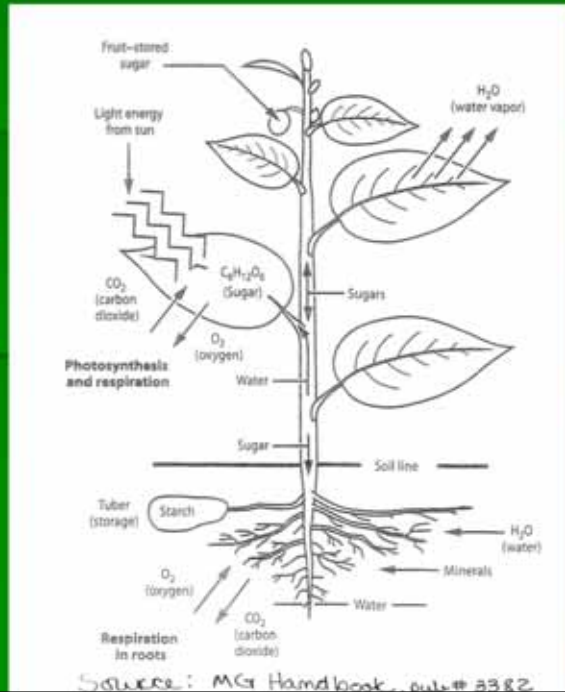
Leaf bud/ leaf with axil bud locates place of heading cut.

Adventitious Buds latent buds below the bark (location unknown) but which may produce a vegetative shoot (new branch)

Note: There is an axil bud at the base of most ,if not, all leaves!

## Basic Fruit Tree Physiology

Key Concept:  
Light management



The overview of this subject is sunlight, the free energy source, which drives the metabolism of the tree. (8 hours minimum.)

Discuss PHOTOSYNTHESIS as in invigorating or devigorating growth

LIGHT MANAGEMENT is the key. It will drive the pruning of mature, established trees.

Give Alert to guard against sunburn.

Axil bud should be mentioned again

## Using Tree Physiology

Characteristics that will be used to control/drive tree development:

- Apical Dominance
- Seasonal Growth Cycle
- Fruitwood Identification

## Apical Dominance

### Physiological Effects

- Correlative Inhibition
- Apical Control
- Shoot Epinasty

Note: The effect of Apical Dominance depends on when in the seasonal growth cycle the pruning occurs.

From DeJong lecture:

Correlative Inhibition – Suppression of lateral buds by vigorously growing apical meristem.

Apical Control – Terminals and upper laterals depress growth of lower (subordinate) shoots.

Shoot Epinasty – Lower shoot have wider angles.

## APICAL DOMINANCE (diagramed)

### Pruning and Apical Dominance

The process called apical dominance allows the tip of the stem to grow longer while suppressing growth of the buds below it on the stem.

If the tip of the stem is removed, eliminating the dominant bud, the previously dormant buds below it will sprout and grow.



Discuss in detail the action of this plant mechanism and that it affects each branch.  
Have demonstration branch.

Note; new branches (shoots) form at buds closest to the heading cut, within about 6 -8 inches. The number of new branches can not be predetermined BUT generally there are more if the heading cut is made during the "grand period of growth".

MORE on this later in a pictorial presentation of one years development.



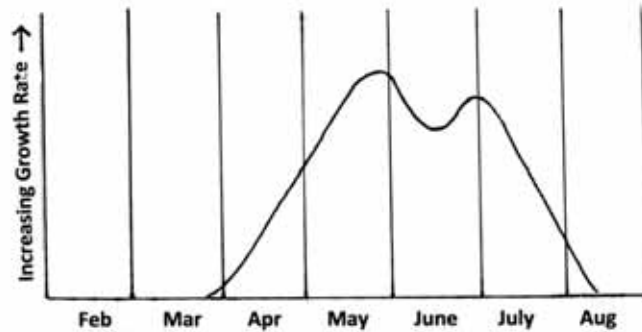
Part of Apical Dominance Section

More on Apical Dominance in Remedial Pruning Section

Growth of 30 inches from heading cut in dormant season.

## Seasonal Growth Cycle

When, seasonally, the cuts are made will determine the number of new shoots,



Generalized Growth Rate – Shoot

Adapted from Fig. 2.12 "The Home Orchard" ANR Publication 3485, p. 18

From "The Home Orchard" p. 18

Emphasize "Grand period of growth"

Add period of fruit initiation: late spring through summer. (Ref. THO pp 19-20.)








## **Fruitwood Identification**

Identification varies with variety.  
Location varies with variety.

Table 7.1 "The Home Orchard", p.72, Fruiting wood characteristics and pruning, etc.

Type of tree	Location of fruiting buds on:				Approx. life of bearing spur or branch	Type of training system	Amount of pruning for mature trees
	Long branches		Short branches or spurs				
	Laterally	Terminally	Laterally	Terminally			
Almond	minor		major		3 years	open center	light (thinning)
Apple		minor	major	major	8-10 years	central leader, modified central leader, open center, espalier, or fruit bush	moderate
Apricot	minor		major		3 years	open center or fruit bush	heavy
Cherry	minor		major		10-12 years	open center or fruit bush	light to moderate
Cherry, sweet		minor		major		modified central leader	light (thinning)
Fig*	major		minor		Bears on 1-year and new shoots	open center, modified central leader, or fruit bush	various
Peach/ Nectarine	major		minor		1-2 years	open center, perpendicular V, or fruit bush	heavy
Pear, Asian	minor	very minor		major	8-8 years	modified central leader, open center, espalier, or fruit bush	moderate to heavy
Pear, European	minor	minor		major	8-10 years	modified central leader, open center, multiple leader, espalier, or fruit bush	moderate

Page 1 of Table for illustrative purposes.

## Plum Buds



Fruitwood on “Elephant Heart” plum

## **Basic Pruning Cuts**

Heading Cut

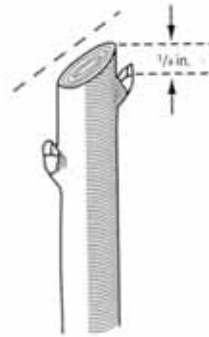
Thinning Cut

Large Branch Removal

## Heading Cut

The cut “heads” the new branch in a desired direction.

Make pruning cuts about  
 $\frac{1}{4}$  inch (6 mm) above a bud  
and slightly angled away.  
Source: After Caldwell et al.  
1972, p.10.



Bring in branches for demonstration.

Connect to Apical Dominance.

Again state that there is an axillary (branch) bud at the base of each petiole

Ref pp11,12 MGH

## Choosing the Right Bud



### CHOOSING THE RIGHT BUD:

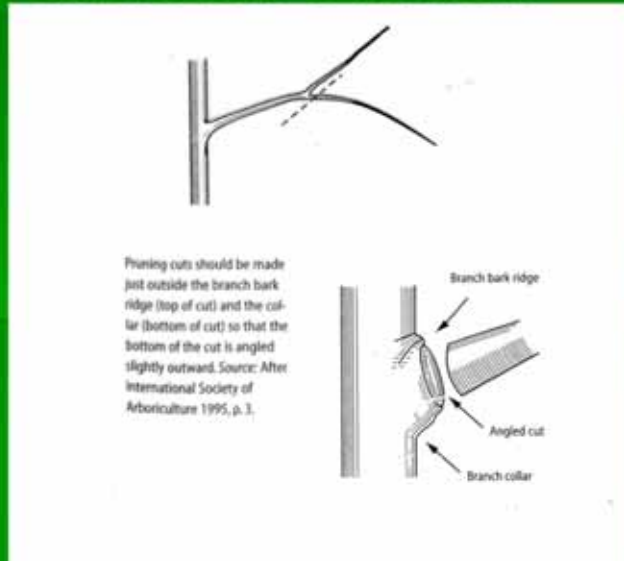
Prune to the lateral bud that will produce the branch you want. An outside bud will usually produce an outside branch. The placement of that bud on the stem points the direction of the new branch.

Discuss heading as in direction again.

Discuss: dft's have alternate leaves/branches and each rotates around the branch.

## Thinning Cut

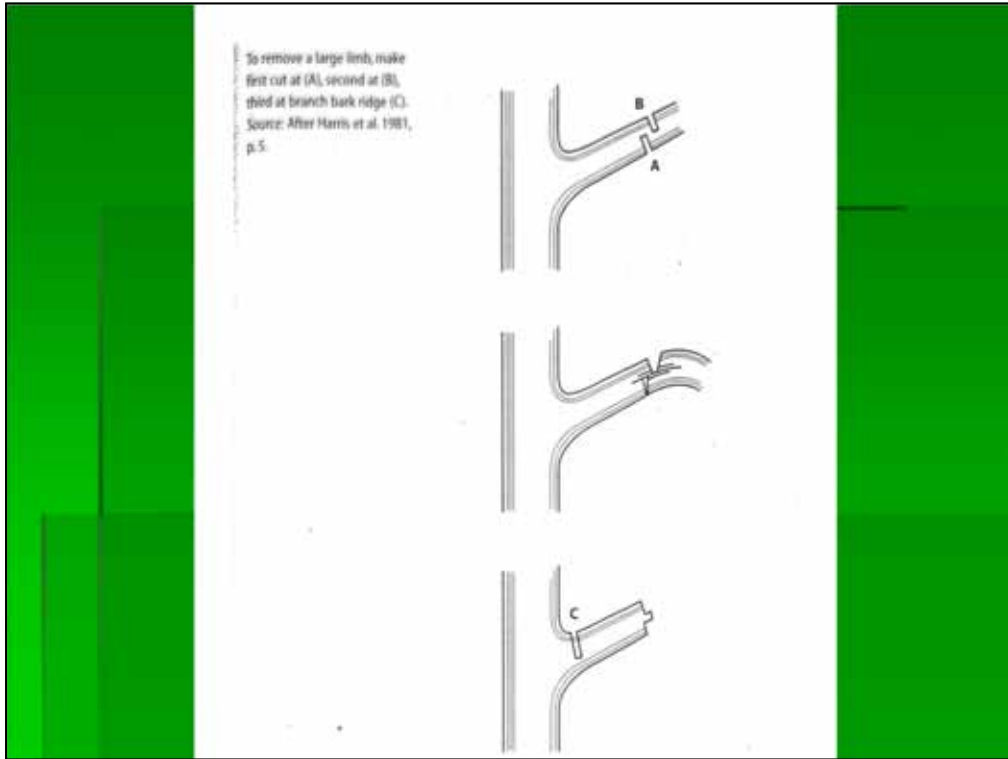
Total removal of a branch.



Stress importance of branch bark collar (bbc).

Bring in branches to display bbc and demonstrate cut.

Note THO Fig 7.4b Thinning cut: lateral branch (remaining) is 1/3 or more of branch removed.



Needed for Remedial Pruning projects.



## Big Branch Removal



- Phase 2, Remedial Pruning Project (more later)

Part of the remedial pruning process on an old Bing Cherry (Phase 2 initiated).

## **Existing Tree Sequence of Pruning**

---

No Brainers (obvious).  
“Light Management”.  
Training/Shaping the tree.

## No Brainers (obvious)

Dead, damaged, diseased wood  
Water Sprouts \*  
Suckers \*\*  
Touching branches

\* can be used to renew tree

\*\* possible use Pomegranates

Water sprout as  
renewal branch.  
Elberta peach  
02.13.10



## Light Management

Sunlight should touch leaves and fruit.

Remove competing branches:  
overlapping, touching or growing to  
center.

Rule of 3:  
prune in relation to other branches.



Apple before pruning 12.30.10

Red Delicious, 12.30.10. Growth congested (double mark = 12")



Apple after pruning 12.30.10

Ref. previous slide. Removed branch 2" to right of story pole.  
Open branches for sunlight to penetrate .



## **Training/Shaping the tree**

What is the desired shape and size ?

What is the Stage of Development ?

Spacing of branches is driven by desired size and shape of tree.

Prune to achieve goal!

Did I say: "think light management"?



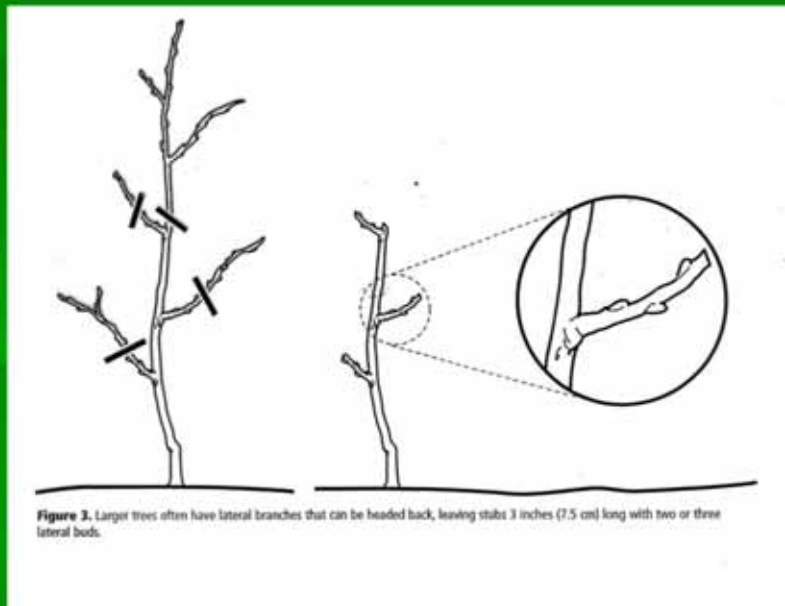
## **New Planting Initial Pruning**

Recommendation:

At planting, tree is “headed back” to start training process.

To “knee height”, 15” – 18” or what branches dictate.

## Newly Planted Tree (diagram)



This displays a “feathered” tree. The tree without any branches is labelled a “whip”.deleted).

Discuss the height of the cut of the leader as driven by the planned system for the tree.

As low as 15 inched for a bush to 24 – 32 inches for a higher (8 -12 foot tree).

## Heading Cut (feathered stock)

Double Jewel Peach  
Headed to ~30";  
lowest available  
branches.  
12.29.09

Note: later slide under "training"  
displays growth in first season.



Slide 53 displays growth in first season

## Heading Cut (whip stock)

Peacotum planted 12.22.11.  
Whip stock has no branches.  
It has branch buds.



# Training Systems

Fruit Bush

Central Leader

Open Center (Vase)

Multiple Leader

The "Y" System – Perpendicular "V"

Espalier

Note: The Fruit Bush method will be illustrated.  
The techniques used apply to all systems.

## Fruit Bush

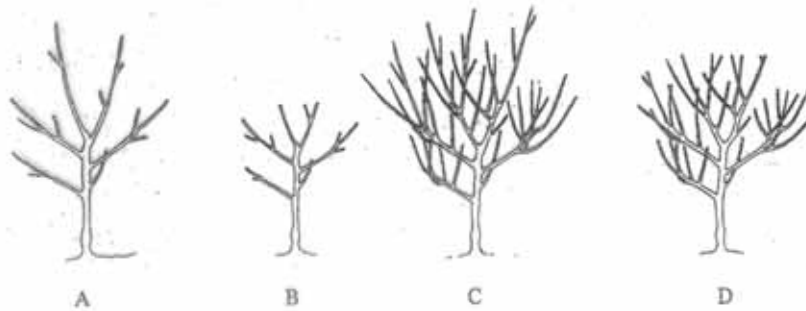


Figure 2. Creating a fruit bush (leaves removed to show structure). A. New growth from trunk in May. B. About half of new growth removed with hedge shears. C. Additional growth in June. D. About half of additional growth removed with hedge shears. Additional new growth may require pruning 1 or 2 more times. Continue each year until tree is at desired height, after which all new top growth is removed through spring and summer.

January, 2000. Written by Chuck Ingels, Farm Advisor. Illustrated by Walter Dong.

## Example of Fruit Bush (after one year)



Shinseki Asian Pear after one year. Height 4 feet.

Initial heading cut at 15-18" on whip (no side branches). Produced six shoots

Note Effect of Apical Dominance (AD) on some shoots (3).

On three lowest shoots no AD noted. Could have been late pruning after GPoG.

GPoG; Grand Period of Growth.

## Fruit Bush (trained)



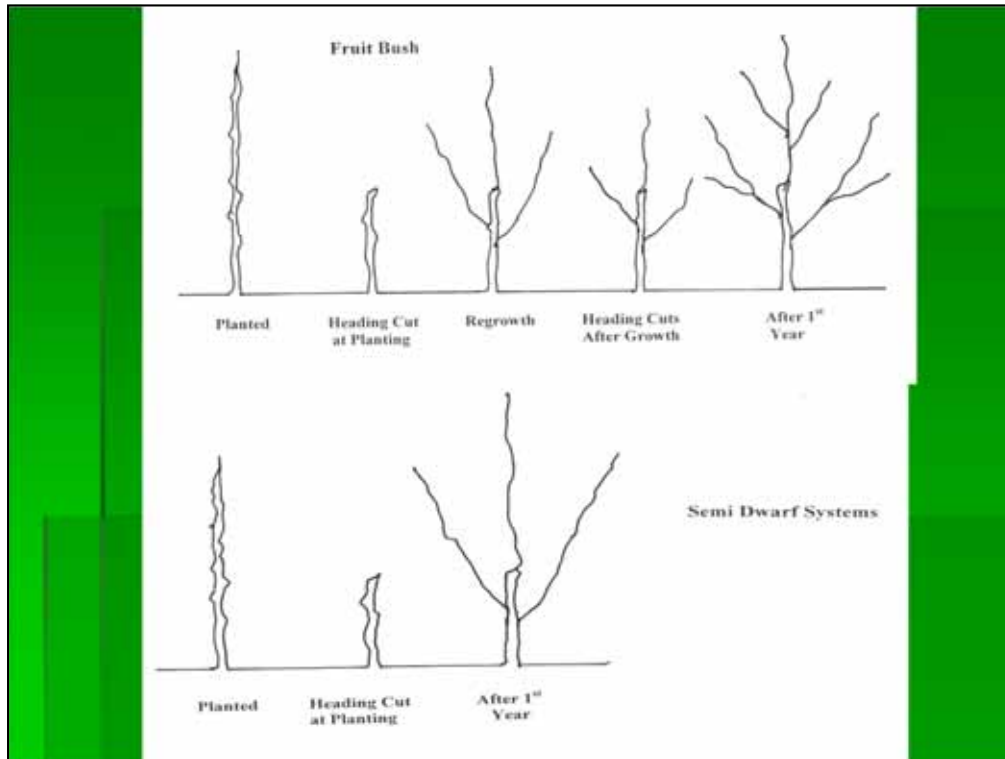
Date  
12.13.08

Harcot Apricot planted 2004 and trained as bush from outset. Had fruit last year, 2007.

Tree 6-7 feet high. Can be tended from the ground.

NOTE: tree lost to crown root rot in spring 2009.





Comparison of growth in first year (bush – semi dwarf)

Discuss need for summer pruning, connect to “grand period of growth”.

May be cut back more than once.

Good for most trees.

Grower commits to extensive effort in first years.

## **Espalier Training**

Tree trained in one plane. Needs Plan!

Needs strong trellis to carry fruit.

Lateral distance varies, ~3.5 – 5'.

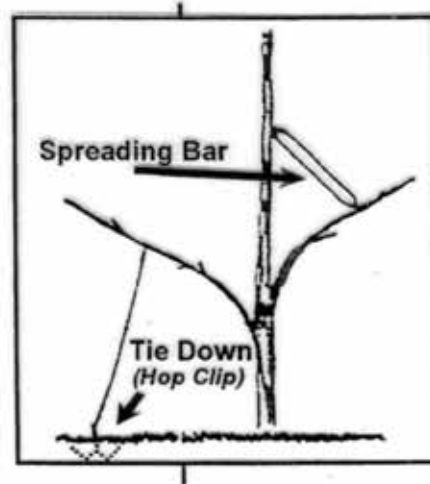
Starts with heading cut, height tbd by plan.

Usual training rules apply with laterals

being supported. Needs attention.

Ref. "Home Orchard" ANR 3485 90-92

## Directing Branch Angle



Discuss options and need to protect bark where device touches it.

## **Notes: Specific Varieties**

Peaches/Nectarines

Apricots

Plums

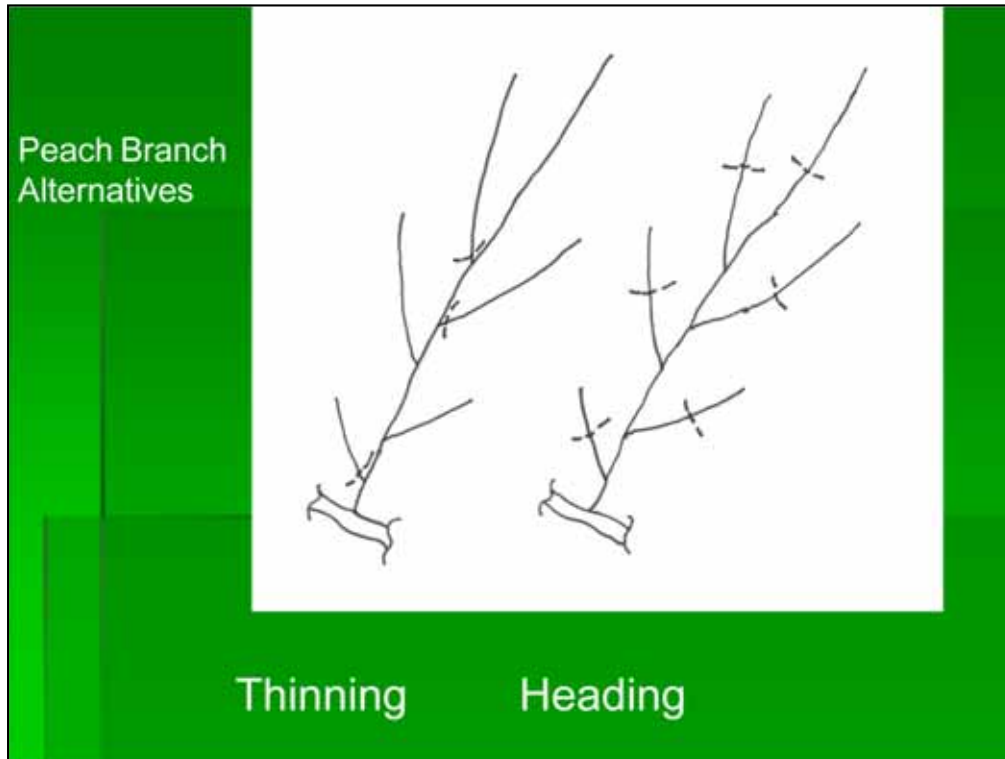
Pomegranates

Persimmons

Cherries

## **Peaches/Nectarines**

- Remove one half (1/2) of new wood, last years growth.
- Consider pruning for fruit production, removing more growth in mature trees.
- Dormant prune in late winter, the end of February – early March.
- In growing season, remove heavy vertical growth which shades fruit.



### Peach branch alternatives

Note: 50% of new shoots are removed.

Thinning cuts tend to develop fruit wood. Leave node closest to remaining branch.

Heading cut tends to develop vegetative growth.

## First season growth

Before pruning;  
Needs to be  
trained to small  
tree (bush).  
12.30.10

Note: to be pruned  
late winter, early  
March 2011.



New approach for peach/nectarine (bush).

Goal to achieve height in one year with vertical development. Prune down to size and develop lateral fruitwood.

Again, stone fruit pruned in late Feb. or early March.

## Apricots

In August, prune for dormant season.  
Remove one third (1/3) new growth.  
Cut laterals to 3" - 4".



## Plums/Pluots

Remove one third, (1/3), new growth.  
Dormant prune in late winter.  
Remove excess fruit spurs, with  
heavy fruiting.

## **Pomegranates**

Produces many suckers, will develop into shrub if not removed.

Can be trained to 8' – in open center or modified leader systems by removing suckers.

Remove water sprouts for light management.  
Ref. "Home Orchard" ANR 3485 94-95

## Persimmons

Fruit grows on terminals: makes control of height difficult.

Selective pruning can control height but fruit production is reduced.

Ref. "Home Orchard" ANR 3485, 93-94

## Cherries

To protect against disease: in August, prune for dormant season. Dormant prune in late winter if needed for training.  
(It's not as dumb as it sounds.)

## End of Pruning Section

### Summary

Be safe!

Have a Plan.

Use appropriate sharp tools.

Consider physiological processes of tree:

Apical Dominance,

Grand period of growth. Seasonal Growth Cycle

Identify fruiting wood and location on branch.

Have a Plan. (Have I said that before?)

## REMEDIAL PRUNING

### FIRST THOUGHTS

- Is the tree worth saving?
- Is the variety desired?
- Is the cultivar desired?
- Is it worth the time and effort to rework the tree?

If the answers are "no", remove and/or replace tree. Or live with it.

## Remedial Pruning Options

Maintain height; remove overgrowth

Reduce tree height (3 – 5 year process)

Drastic (1 year process)

Graft desired cultivar(s)

Ref Ingels 8058.

Remind of Sunburn.

Look for shoots down low. Adventitious buds may save the day.

Removing overgrowth should be done in steps over years.

Cuts should be made in spring when tree is approaching or is in the “grand period of growth”.

## Remedial Pruning Considerations

Risk / Reward

The tree may be lost or mutilated

HAVE A PLAN

What is the desired shape or form

Have PATIENCE

Most plans require years to complete

Recap on the plans from cutting back to a stump to other options.



## Planning Phase

Why is this tree to be remedially pruned? \_\_\_\_\_

(What is the desired outcome?)

When is the best time of year to accomplish this?

Seasonal growth cycle; disease considerations

Where – which branches/limbs at each point in the project. \_\_\_\_\_

Why; to improve productivity and ease of maintenance. Tree too large, overgrown; a mess.

When; back to grow cycle of tree. Emphasize patience: see what the tree gives you a choice is made between branches

Where; contingent on plan. But major branches may be removed.

## Some Experiments in Remedial Pruning Photographic Presentations and Histories

### INDEX

Apical Dominance

Small Tree Reconfiguration (Craig's Crimson Cherry)

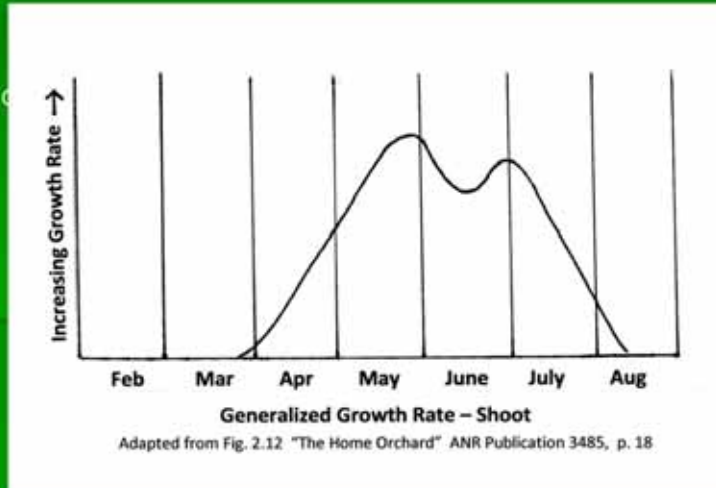
Drastic (1+years) – (Elberta Peach)

Reduce Tree Height (? Years) – (Bing Cherry)

Examples of Bark Grafting

## Seasonal Growth Cycle Revisited

When, seasonally, the cuts are made will determine the number of new shoots



Recap of growth cycle: where the tree is its cycle determines how much branching occurs.

From "The Home Orchard" p. 18

Emphasize "Grand period of growth"

Add period of fruit initiation: late spring through summer. (Ref. THO pp 19-20.)

## Apical Dominance Demonstration Shoot

Cherry Shoot  
Date: 01.01.08



This is one years growth on a large limb removed in summer of 2006. It sprouted from an adventitious bud. Note the vigorous growth; about 42" (3 ½').  
The heading cut will at a height (length) of 18 – 20" (at left thumb of holder).



Cut made below thumb. Five buds are presented. How many will grow is up to the tree. (Stay tuned!). Side view illustrates a proper heading cut;  $\frac{1}{4}$ " above bud at an angle (30 – 45 degrees).

Ref: slide 70, next. Growth displayed was too high (over 7') above ground. A new heading cut was made 3 buds lower. The development is displayed following Total Growth – First Year (65)

## Regrowth –May 2008



First pruning in May. Before on left and after on right. Tree produced 3 vigorous shoots.

First growth about 30 – 32”; pruned back to about 12”. Left some side shoots on pruned shoots.

Training plan produced significant growth that was too high off ground. Branch headed lower in 2009. Ref: following slides.



Final growth for 2008.

A 42' shoot was reduced to 24" with 4 side branches which developed 6 shoots.

The height of the branch is 7' 6". (Maybe the initial cut was too high; the main branch may be cut about one foot lower in early 2009.)

Note: This branching removed 02.25.09. Cut 9-10" lower: length of branch removed 31". Height of heading cut about 5 feet above the ground. Ref slide post 02.25 pruning. (See Note.)

Note: the additional display of AD on right hand margin.

Note: Could not recover photo taken 02.25.09





Total branching after two years

Final heading cut (2008) was below 2 foot mark on story pole, shoulder level.  
Therefore the terminal was ~ 2' 6" higher.



## Small Tree Reconfiguration (Craig's Crimson Cherry)

Tree originally planted in cherry hedge-six trees on  
18" centers in 2000.

Plan didn't work- trees became malformed because  
of competition.

## Craig's Crimson (in Box)



Hedge planted 2000; trees on 18' centers. Box oriented east/west. Craig's Crimson is second from right

Photo id'd as 100\_3988.JPG



Displays “ugly” shape of tree: 7’ – 8’ tall, 10’ wide, in one plane with no interior branches. Decision made to improve shape and “bush” tree.



Tree leafed out in spring prior to pruning. Note poor form of tree: spread out and spindly.



## Pruned April 2007 – two views



Note Nurse branch which was not pruned. Trunk diameter (caliper) 1 ½"; high point 2' 4".

## Growth - 2007

Date 02.16.08

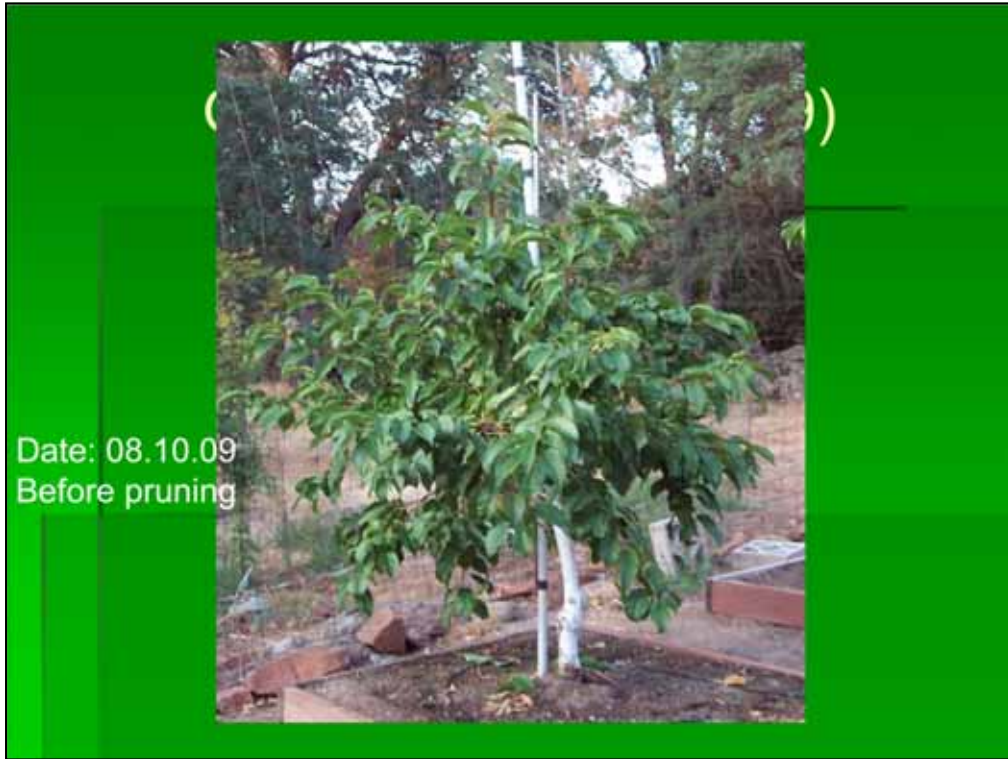
Nurse branch  
removed

Minor 2007 growth





Growth in June 2008; 4 months after previous slide.



Height ~5', Width ~6".

Tree produced some (minor amount) of fruit.





View to NW. Note Nurse Branch cut is callusing over (healing).

Produced fruit Spring 2009. Has fruit spurs. Picture displays growth after dormant pruning in August 2009. Next pruning in Spring 2010 after bearing.

## Elberta Peach

History: (No photograph taken of original shape.)

Tree planted ~1986; 10 feet plus tall; branches to 7 feet.

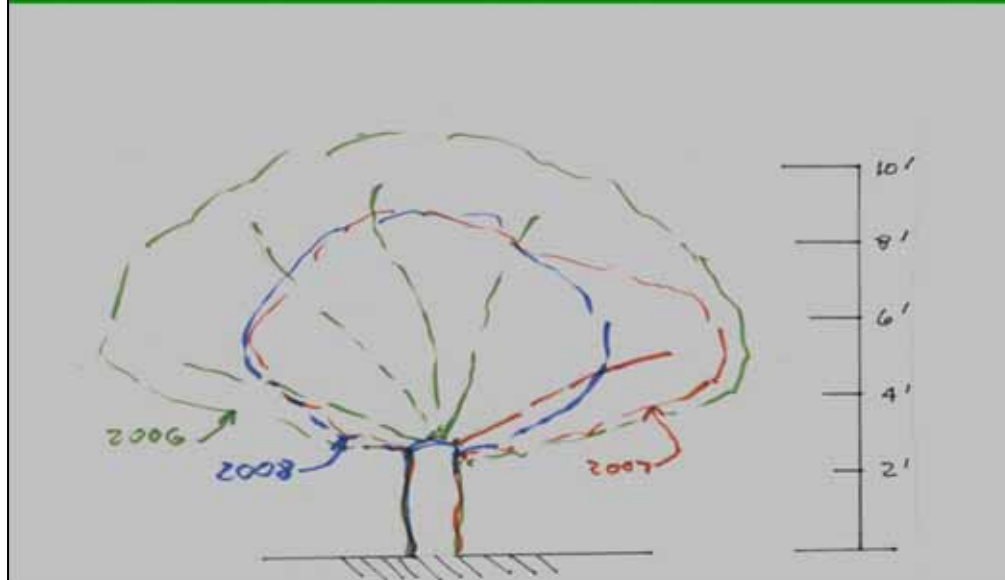
Overall very leggy – not productive and difficult to tend  
– needed ladder.

Prior attempts to control height unsuccessful.

Original plan modified as chainsaw syndrome set in.

The original plan on the day this restoration started was to remove one large branch. This plan had been started the year before (2005). In 2006, the tree looked ugly and a shoot was noted low on the trunk. The chain saw was being used to remove the chosen large branch. Once the saw was operating control was lost and all but one large branch was removed: Branch sizes from 3 -4 " in diameter. This branch was saved because it a shoots and branches on it.

## Elberta Peach Diagram Restoration



### History of Restoration:

2006 shows before pruning dotted lines indicate major branches, 3" – 4" thick, removed (in green color).

2007 shows new growth before pruning in winter 2007/08 with one major branch, 4" thick, removed (in brown color).

2008 shows final tree shape (in blue color).



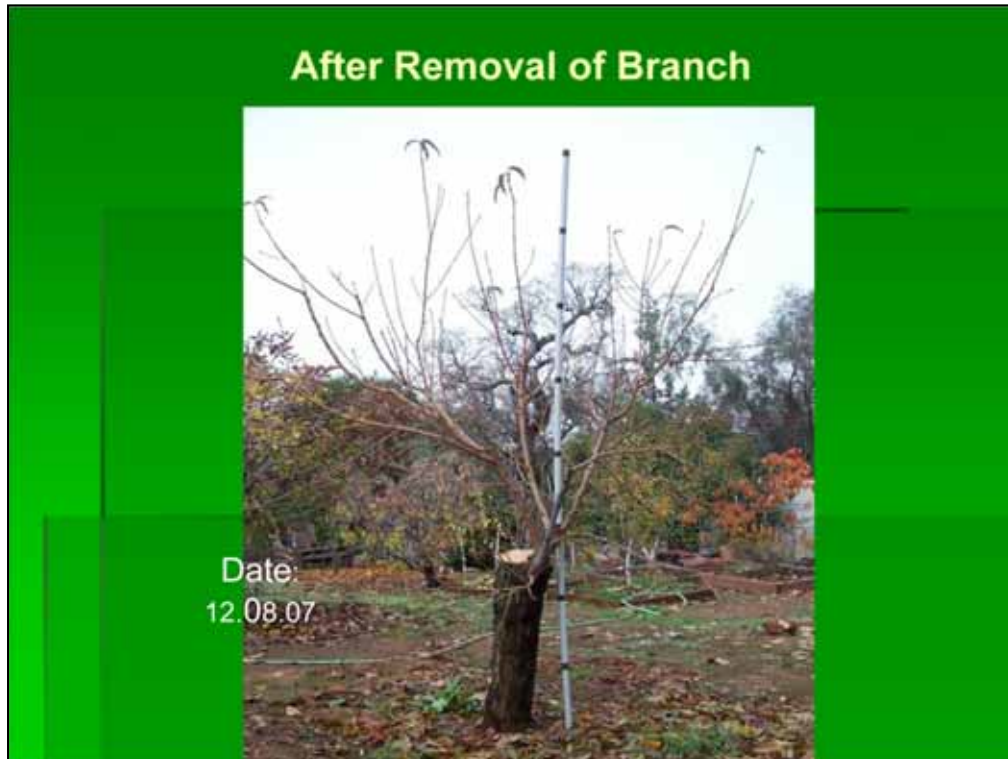
View to South.

The small shoot on the right developed massive growth. The structure on the left acted as a nurse branch(?).



View to Northwest.

With large branch (4" diameter) which was 4-4 1/2 feet high. The original plan called for it to be removed. Growth of tree to 8 feet.



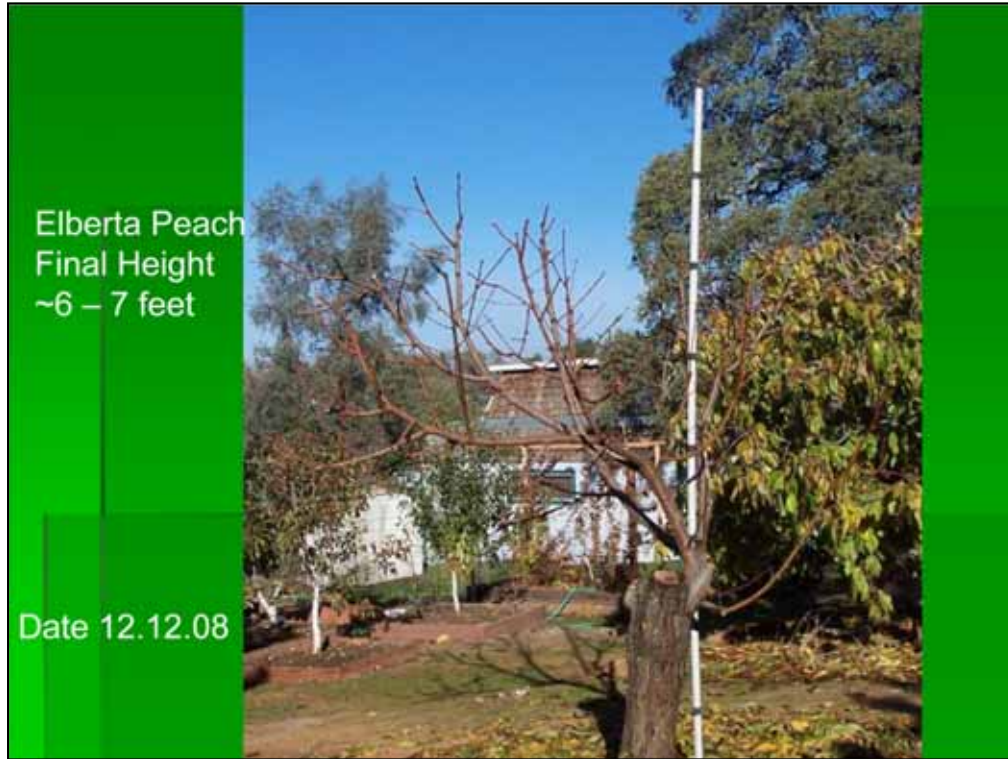
View to Northwest. Nurse branch, ~4" OD, removed.  
Final trunk configuration. Remaining branches to be pruned.





Final dormant pruning; from 8' plus to under 7'. All pruning cuts made from ground (no ladder used).

View to north. Need growth to east (right)



After pruning. Height controlled to six feet.



## Bing Cherry Tree

### History:

Tree planted 1980.

Height 14 – 15 feet (after numerous attempts to control height).

Upper limbs subject to sunburn.

Width at ground 15 – 18 feet east/west; 10 – 14 feet north/south.

Very Productive but impossible to tend.

Hard to protect fruit from vertebrates.

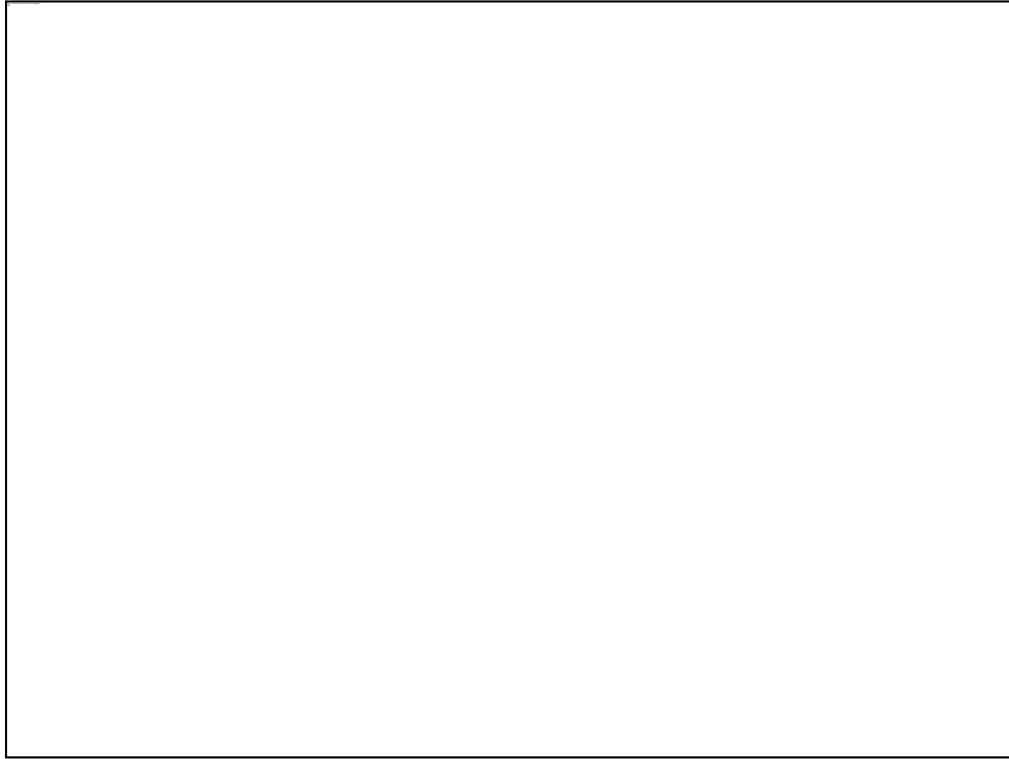
No original shape photograph (chain saw syndrome).

Initial branches (scaffolds) removed 06.12.06.

Three Phase plan of removal: center(1), east(2) and west (3).

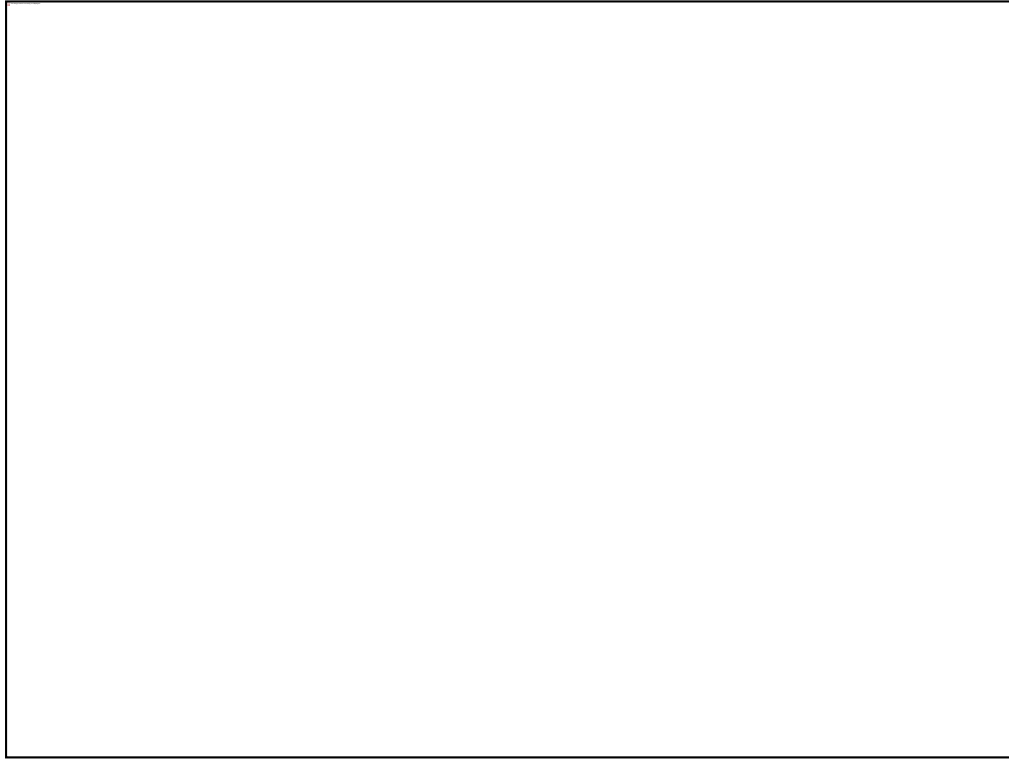
Tree adjacent to Elberta Peach, branches touching. On 06.12, with the chain saw operating, it was decided to work on this tree. Original plan called for restoration to be in three steps. The center section followed by the east and west sections.

Later slides will show the structure of the tree: big limbs remaining and stubs of limbs removed. Photos taken 06.01.07

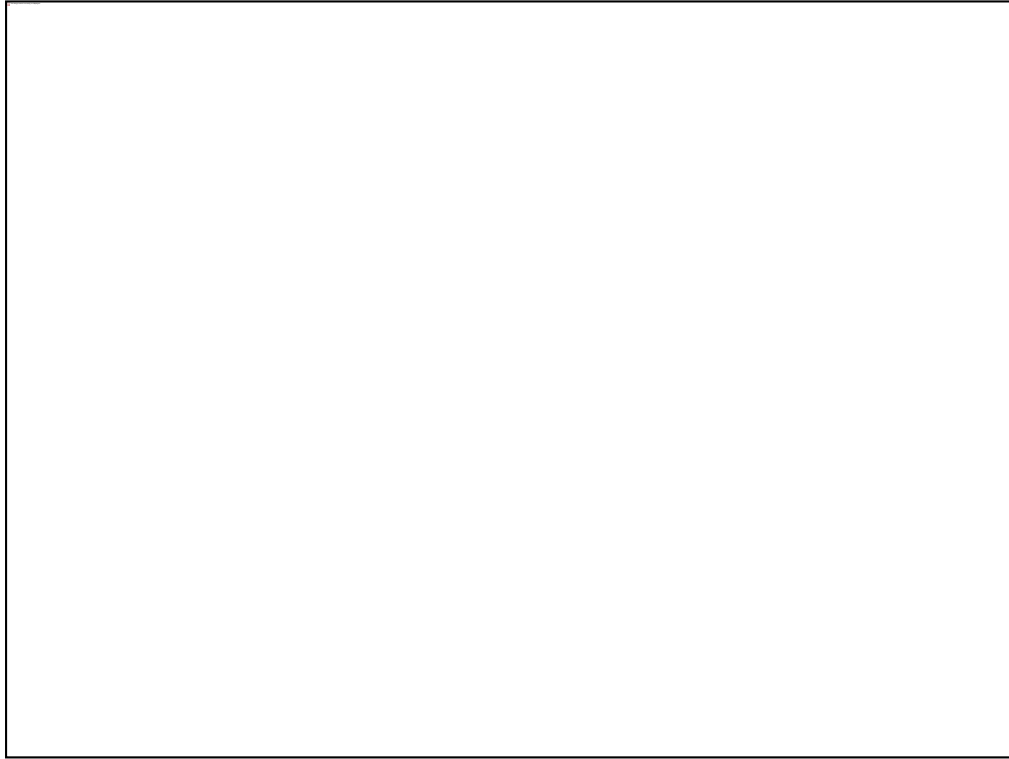


View to south of major branches removed in 2006. Should the cuts have been deeper (shorter stubs)?

Branch to the left was removed as initial part of phase 2.

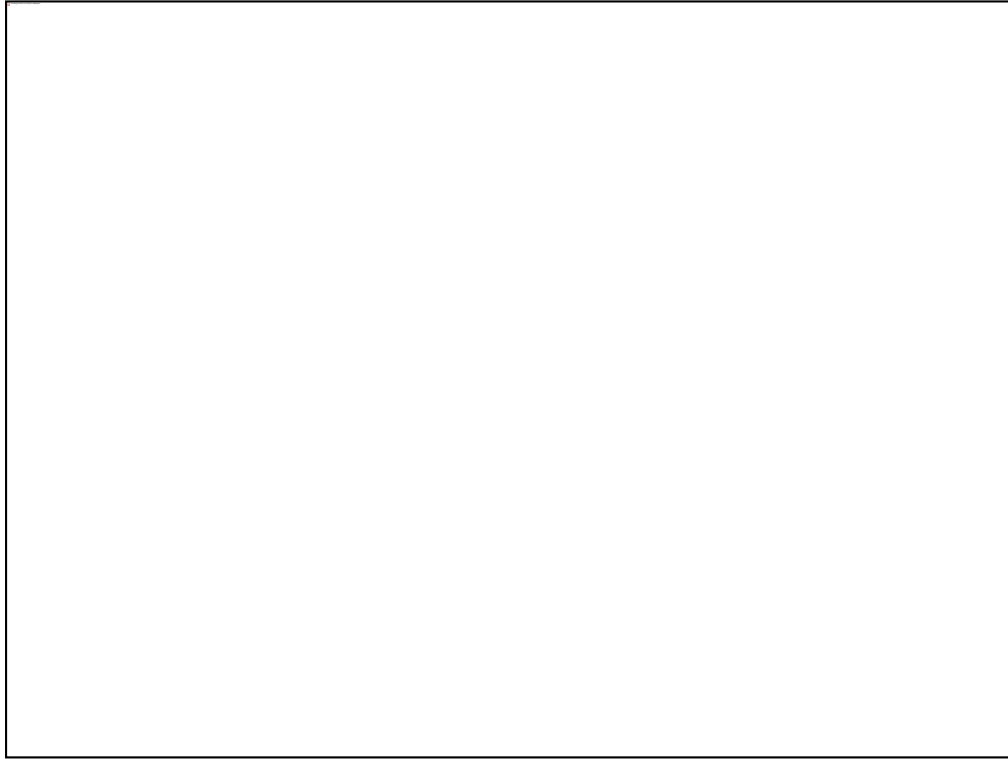


View to Southeast. Branch on north side of tree, pointing north.  
Date: 03.07.07. Note new sprouts and adventitious buds.



View to North.

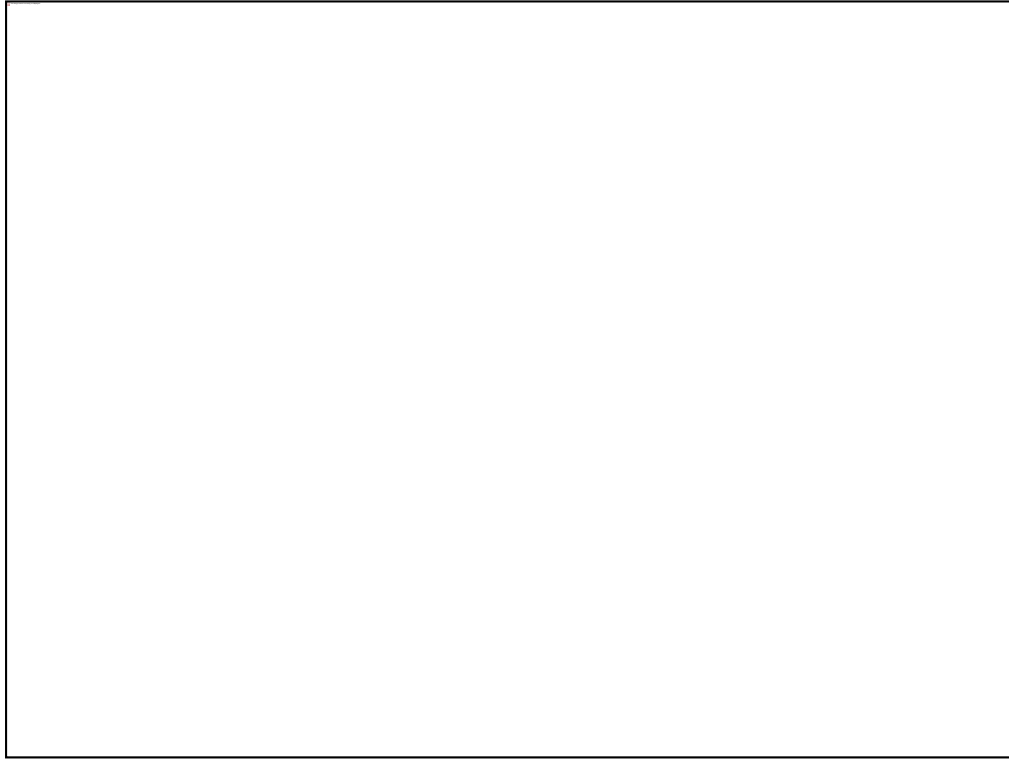
Date: 06.01.07. Note hole in canopy and new growth in center of tree. This was the result of the prior (2006) branch removal (Phase 1). For orientation, the fence runs east/west.



Note story pole (8 feet). East Section reduced from 14-15 feet to 8-10 feet.

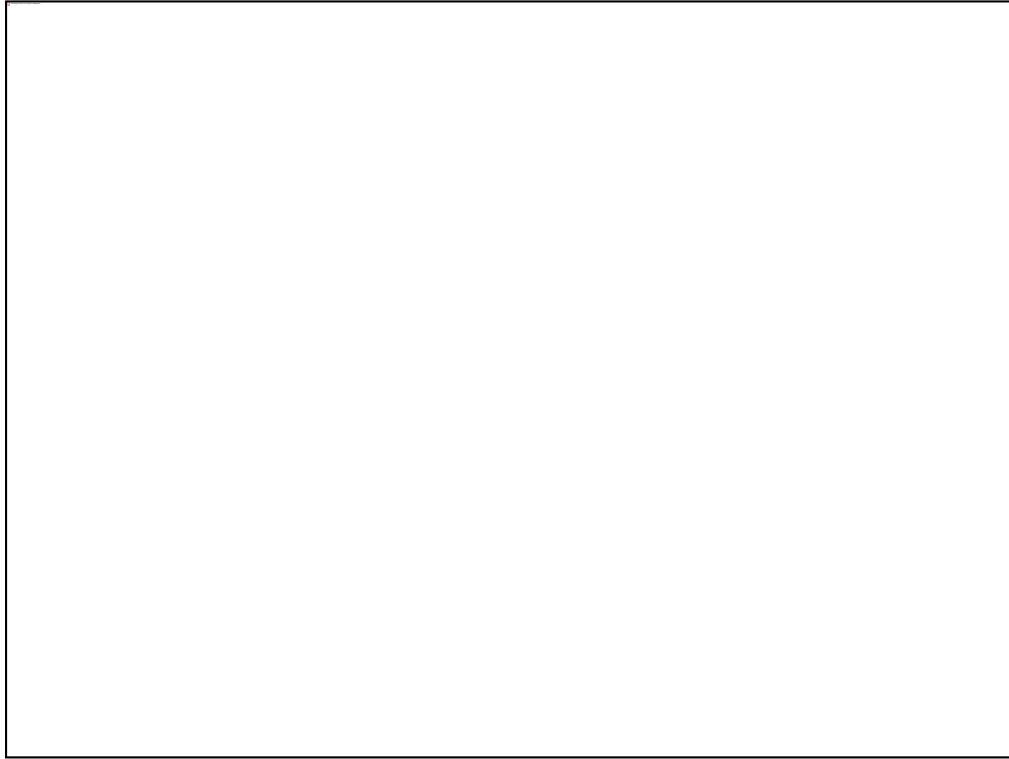
At this point the original plan was under reconsideration: from removal of the major branches in the east section to reduction of the height. The option was open into 2008.

Later choose major reduction – as will be shown.



View to North.

Note: Story pole shows a height in excess of 8 feet for the east (phase 2) portion of tree.



Phase 2 initiated with removal of east branch.

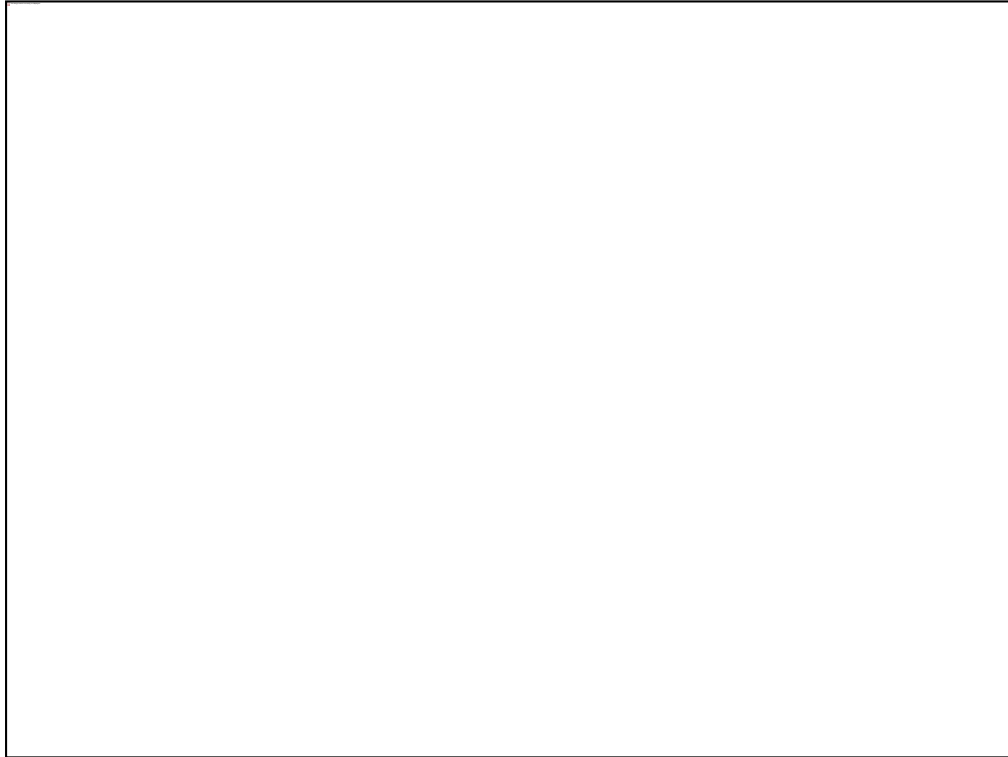
Phase 1 branches adjusted, cut back further.

Next slide displays reversed closer view.



View to South (SWS). Shows stub remaining of Phase 2 initial cut.  
Also shows stubs of initial cuts of Phase 1. Note branches on Phase 1 section.





Phases 1 & 2 after two years of growth

12.20.09 Total growth after summer (dormant) pruning. Phase 3 covered. Pink tape not moved.

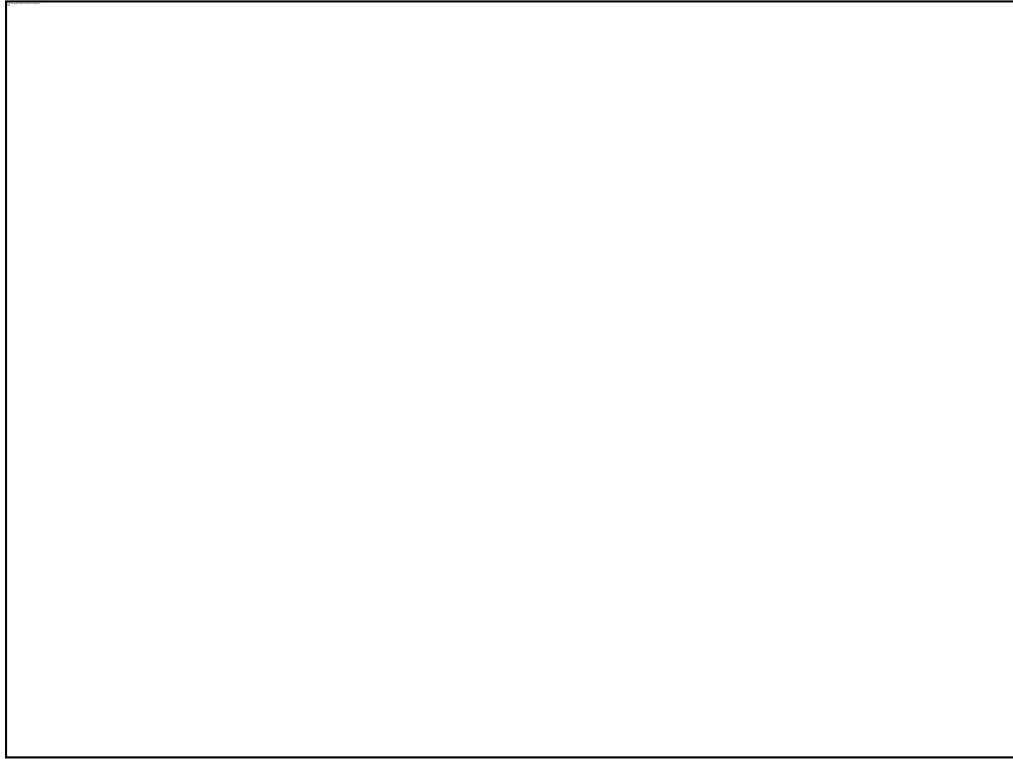
Height at ~7'. Demonstration branch (Apical Dominance) corrected.

No fruit spurs observed. Will check in Spring.

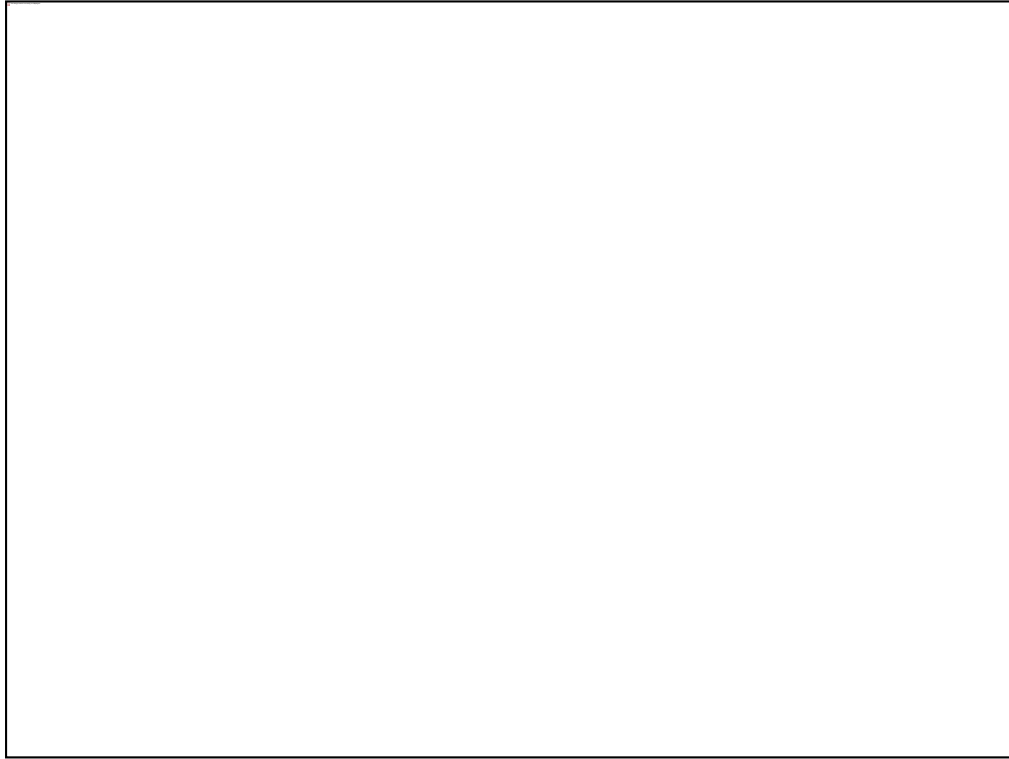
## Bing Cherry Phase 3(a)

Cut made 06.2011.  
Photo 12.27.2011.  
View to ENE,  
displaying Phase 1  
stubs.  
Also shows branch  
connection for  
Apical Dominance  
demonstration.





Bark grafts made April 2004.



2004 bark grafts; Jonagold (left) and Golden Delicious (right).  
Produced fruit in 2008. Two of three grafts of each variety took.

## Bark Graft Example 2

April 2007 Graft.  
Honey Crisp on Winesap

12.20.09



Graft after two years. Note heading cuts.

This tree (Winesap) has a total of seven grafts; some producing.

Stump is at 3'. Only one of four grafts took.

# RESOURCES

The Home Orchard  
Master Gardener Handbook

Websites:

[anrcatalog.ucdavis.edu](http://anrcatalog.ucdavis.edu)

[homeorchard.ucdavis.edu](http://homeorchard.ucdavis.edu)

[ipm.ucdavis.edu](http://ipm.ucdavis.edu)

EDC Hotline 621-5512

## End of Program

El Dorado County Master Gardener Program  
UC Davis Cooperative Extension

## **Navigating Websites**

[anrcatalog.ucdavis.edu](http://anrcatalog.ucdavis.edu):  
for free publications.

[ipm.ucdavis.edu](http://ipm.ucdavis.edu):  
for information on variety.

[homeorchard.ucdavis.edu](http://homeorchard.ucdavis.edu):  
for more publications on trees.



## Home Orchard website

Go to home page.

Select "The California Backyard Orchard".

**View left side bar.**

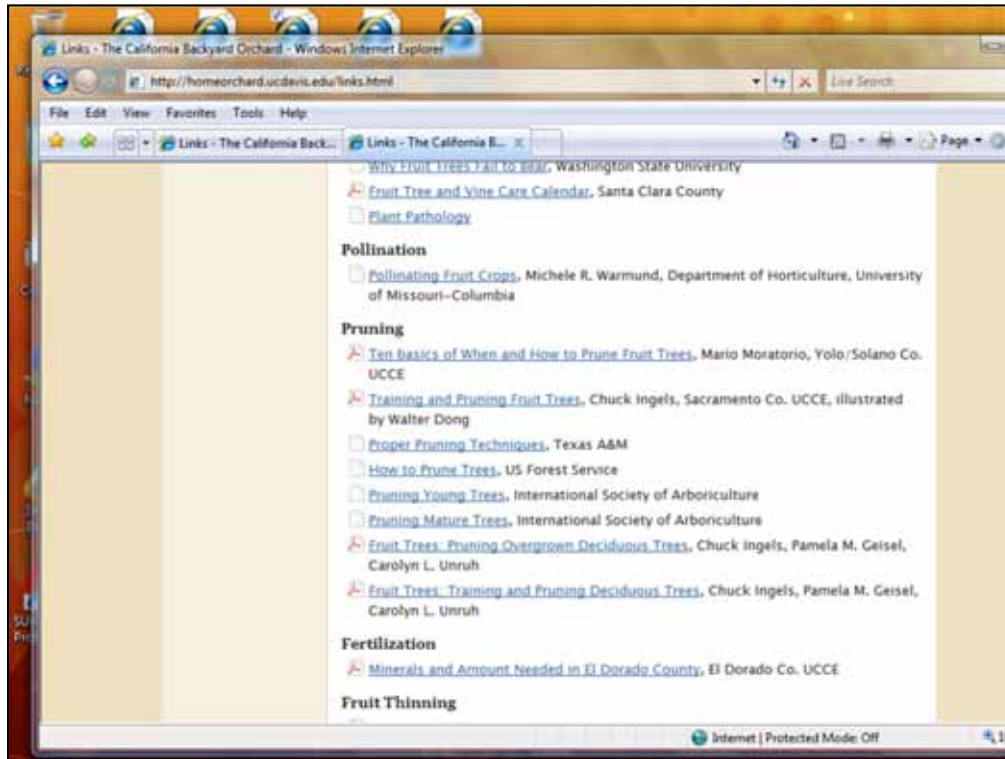
**Select subject of interest.**

**Suggest: "Links".**

**Scroll and locate publications related to pruning  
and remedial pruning.**

**Suggest look for Chuck Ingels as author.**

**Some are printable online.**



Chuck's publications are printable.

## lpm.ucdavis.edu website

On home page, Choose "Homes, Gardens, Landscape, et al.  
Choose "Fruit Trees, etc."  
Choose particular fruit, e.g., "Apples".  
Under "Cultural tips", choose subject of interest. Here  
"pruning".  
Read some good information.  
[The same procedure can be used for all varieties listed.]

Managing Pests in Gardens: Fruit; Cultural Tips: Pruning—UC IPM - Windows Internet Explorer

http://www.ipm.ucdavis.edu/PMG/GARDEN/FRUIT/CULTURAL/applepruning.html

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Managing Pests in Gardens: Fruit; Cultural Tips: P...

University of California • Agriculture and Natural Resources

**UC IPM Online**  
STATEWIDE INTEGRATED PEST MANAGEMENT PROGRAM

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## How to Manage Pests Pests in Gardens and Landscapes

### Pruning

Pruning mature trees consists of balancing vegetative growth with bearing wood. Apple and pear trees normally bear on the terminal end of spurs located on wood 2 years old or older. Fruit spurs are productive for at least 5 years and longer, although the best production is from fruit wood that is 3 to 5 years old. As the trees reach 6 to 8 years of age, you should start to renew the fruiting spurs by pruning out one-third to one-fifth of the older fruit wood. Avoid cutting out large scaffold limbs because they tend to decay. Also avoid cutting into the branch bark ridge, which is where new tissue that promotes wound closure originates.

Proper pruning can help prevent diseases such as powdery mildew, fire blight, and bacterial blast and canker. Do not overprune as this may lead to sunburn, which may make trees susceptible to borers.

Note: Different varieties have different pruning requirements: One shoe does not fit all feet.