Pruning and Training

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Pruning and Training

- Goals for training and pruning include:
  - Producing a supporting framework for the tree
  - Allowing annual flower formation
  - Developing a tree which allows maximum fruit growth and quality development
  - Ease of management

Pruning Equipment

Keep Sharp!

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Figure 2. Hand Pruning Equipment

Parts of a Fruit Tree

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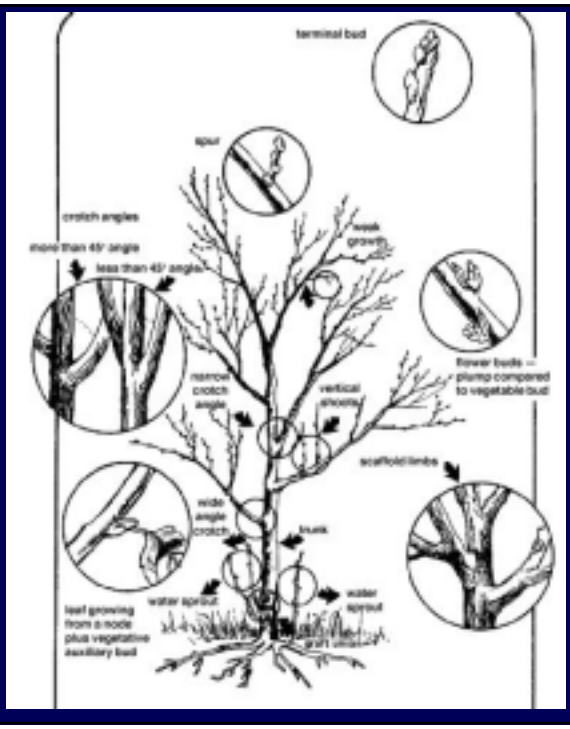
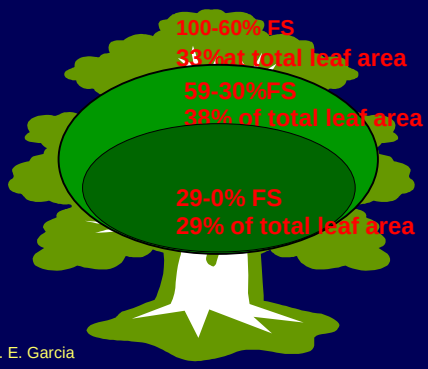


Light Penetration

Light penetration into the canopy of a large tree



Effective light penetration into an unrestricted canopy is ~ 1 m

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Light Penetration

% of full radiation needed for various quality factors in apples

Character	Satisfactory development	Unsatisfactory development
Fruit size	>50%	<50%
Red color	>70%	<40%
Spur development	>30%	<25%

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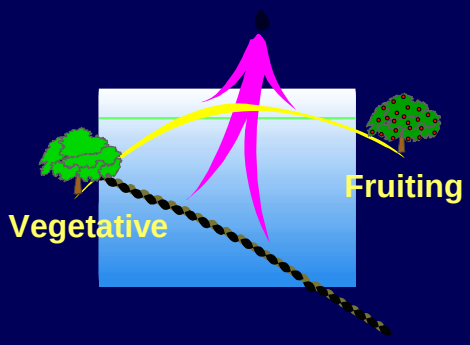
Pruning and Training

Balancing Act



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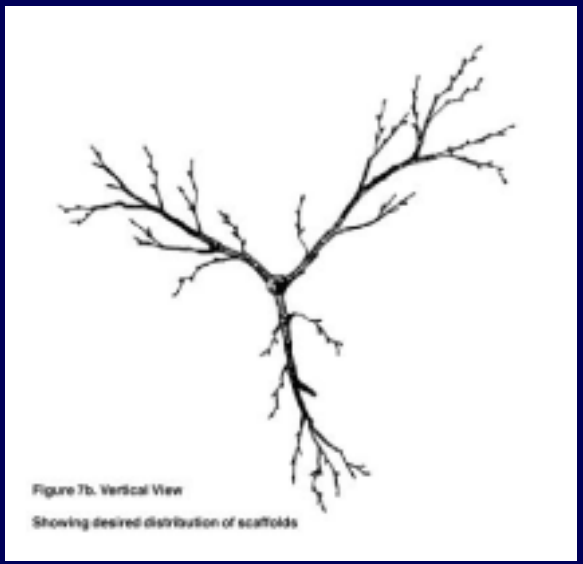
Vertical View Showing Desired Distribution of Scaffolds

…needs to be developed during years 1-3 of training



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Light Penetration

No shading should occur from the branches above

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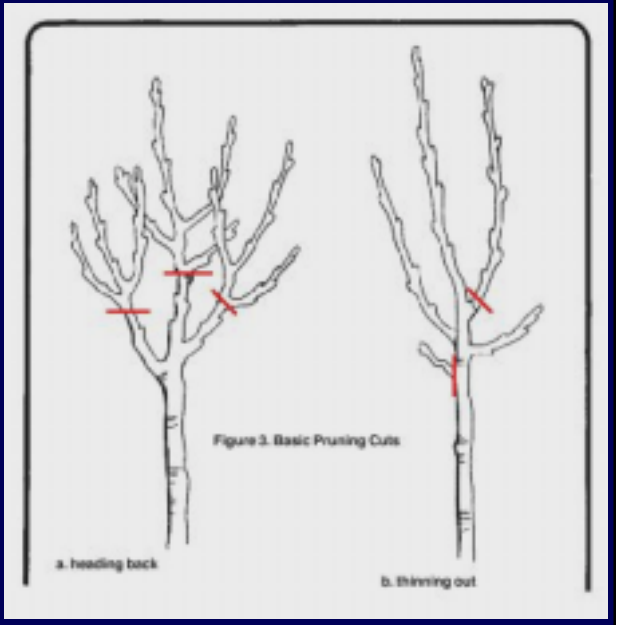
Types of Pruning Cuts

- **heading back**
- **thinning out**



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Pruning
Heading back cuts

- Removal of a part of a shoot or branch
  - It removes terminal buds
  - Apical dominance is weakened or lost
    - Physiological effects
- Net result: increase in total shoot growth

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Pruning
Heading back cuts

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Pruning
Thinning cuts

- Removal of an entire shoot or branch at its junction with the trunk
- Ratio of terminal to lateral buds is not disturbed
  - Less physiological changes
- Net result: It does not increase shoot growth as much as heading cuts

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Pruning
Thinning cuts

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MODIFIED CENTRAL LEADER System

...at planting

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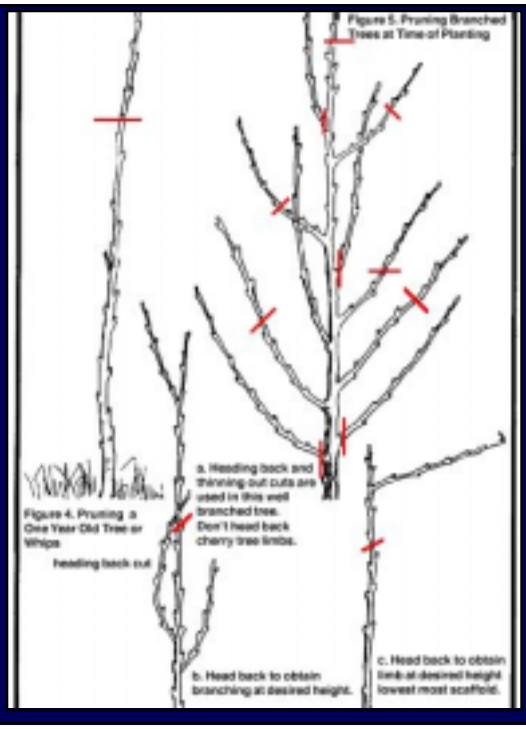

MODIFIED CENTRAL LEADER (cont.)

...2nd and 3rd year dormant pruning

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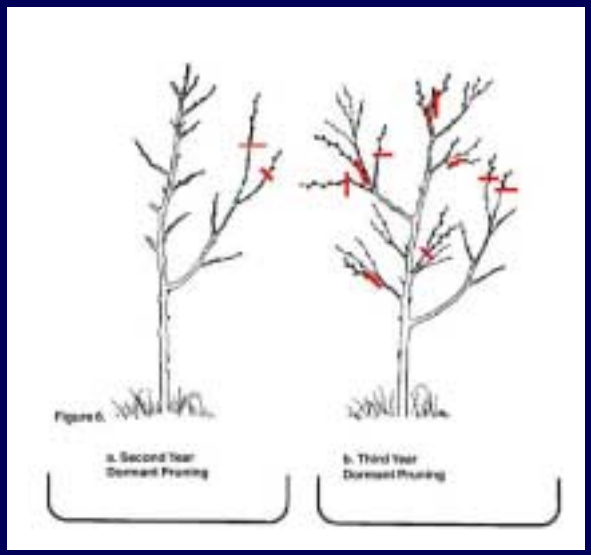

Before and After

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Branch Spreading

- promotes strong crotch angles
- promotes early bearing
- reduces scaffold vigor

Figure 13. Spreading Branches to Obtain Desired Branch

Use spreaders or tie down branches

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Pruning Bearing Fruit Trees

- annual necessary
- dead, damaged branches
- water sprouts
- weak, drooping wood
- crossing-over
- thin out ot increase light

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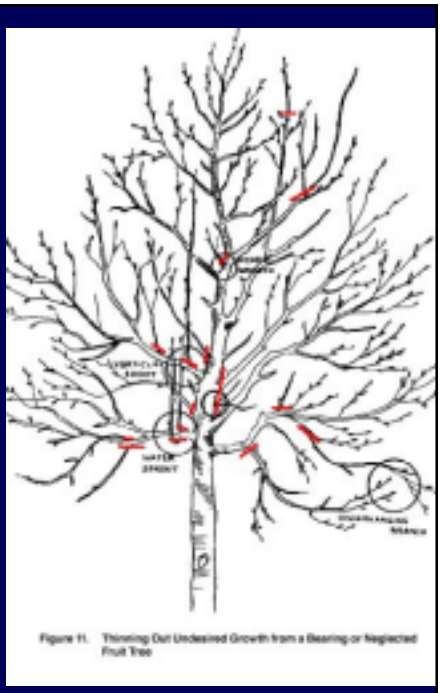

Lowering the Height of a Neglected Tree

Removing Undesired Interior Branches from a Neglected Tree

Reducing the Breadth of a Neglected Tree

Figure 16. Reducing the Breadth of a Neglected Tree

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Excessive branching due to the removal of the central leader

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Large tree with good light penetration

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Common Training Systems

Training system	General description	Advantages	Disadvantages	Density	Rootstock
Central leader	Free standingMost commonSingle, central trunkPronounced conic shapeSeparate and distinct tiers of scaffold branches	High yields at full canopyHigh fruit quality	Slow to come into productionHigh labor costs due to use of ladders and the pruning of large trees	Low to moderate250-400 trees/Ac	MM.111MM. 106M.7 Mark
Slenderspindle	Needs supportVery successful in Europe	Early croppingHigh tree densityMinimal pruningEfficient use of labor	High initial costSunburn	High800-1100	DwarfingRootstocksM.9Mark
Vertical axis	Tall and narrow with a supported, dominant central leader	Early productionEfficient use of labor	Tall trees require laddersExcessive growth of the central leader	500-700 trees/Ac	M. 9 EMLA 26 EMLA 7

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Thank You
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