

Standards for Tree Pruning



**BRUCE R. FRAEDRICH PhD
BARTLETT TREE RES. LABS**

PRUNING TYPES

Maintenance

- Clean
- Raise
- Thin
- Reduce



- ## Specialty
- Restoration
 - Vista
 - Espalier
 - Pollarding
 - Restoration
 - Structural

NATURAL PRUNING

- This technique allows the tree's natural growth habit to develop.
- Natural pruning removes undesirable branches, reduces growth of overly vigorous branches, directs growth of branches and shapes the tree for its intended functions.

PRUNING SYSTEMS

- **Natural**
- **Vista**
- **Espalier**
- **Pollarding**
- **Fruit Tree**

Pre-Climb Risk Assessment

- **Tree Workers should thoroughly inspect tree and site for defects and condition that could lead to accidents or injuries.**



CLEAN

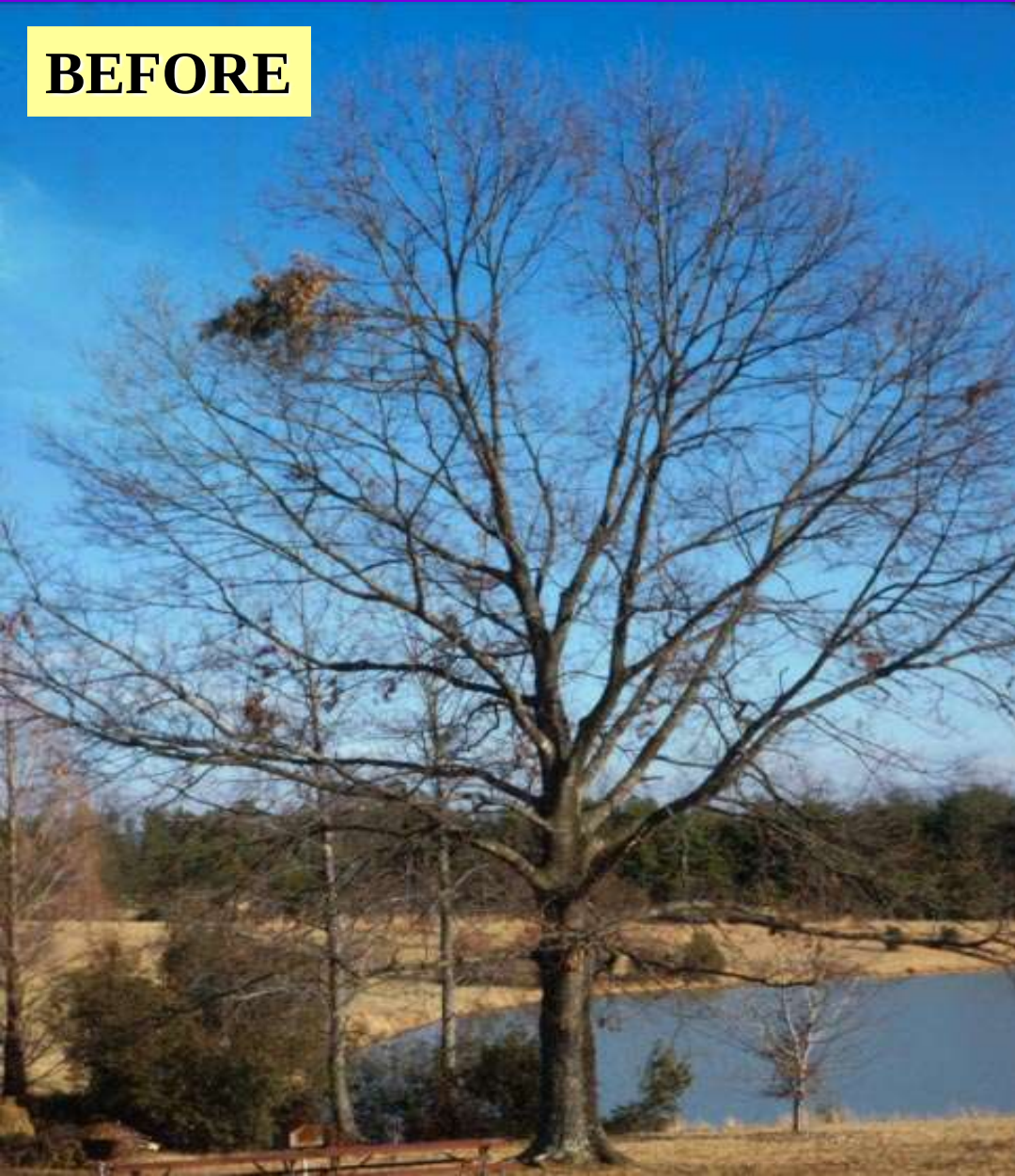
CLEANING is the selective removal of dead, diseased and/or broken branches.

Arborist specifies size limits of branches to be removed.

Benefits: Improve plant health, appearance, reduce potential for branch failures

OAK -CLEANING

BEFORE



AFTER





Raise

- **REMOVAL OF LOWER BRANCHES TO PROVIDE CLEARANCE**
- **Specify height of clearance and size range of branches.**
- **Benefits: Provide clearance, Increase sunlight penetration to turf.**





**Delay Removing Lower
Branches**



Thin

Thinning is the selective removal of branches to decrease crown density.

**Specify percentage of live crown to be pruned and
Size range of branches to be pruned.**

Benefits: Improve light and air penetration, reduce wind resistance, provide branch definition, reduce risk of branch, stem and/or root failures.

CROWN THINNING

- **Not more than 25% of the foliage surface should be removed from an individual limb or from the entire crown during a single growing season.**
- **Thinning should result in an even distribution of branches on individual limbs and throughout the crown.**

ELM BEFORE THINNING



ELM AFTER THINNING



OAK- THINNING

BEFORE



AFTER





**THINNING
EMPHASIZE
PRUNING ON
BRANCH ENDS**





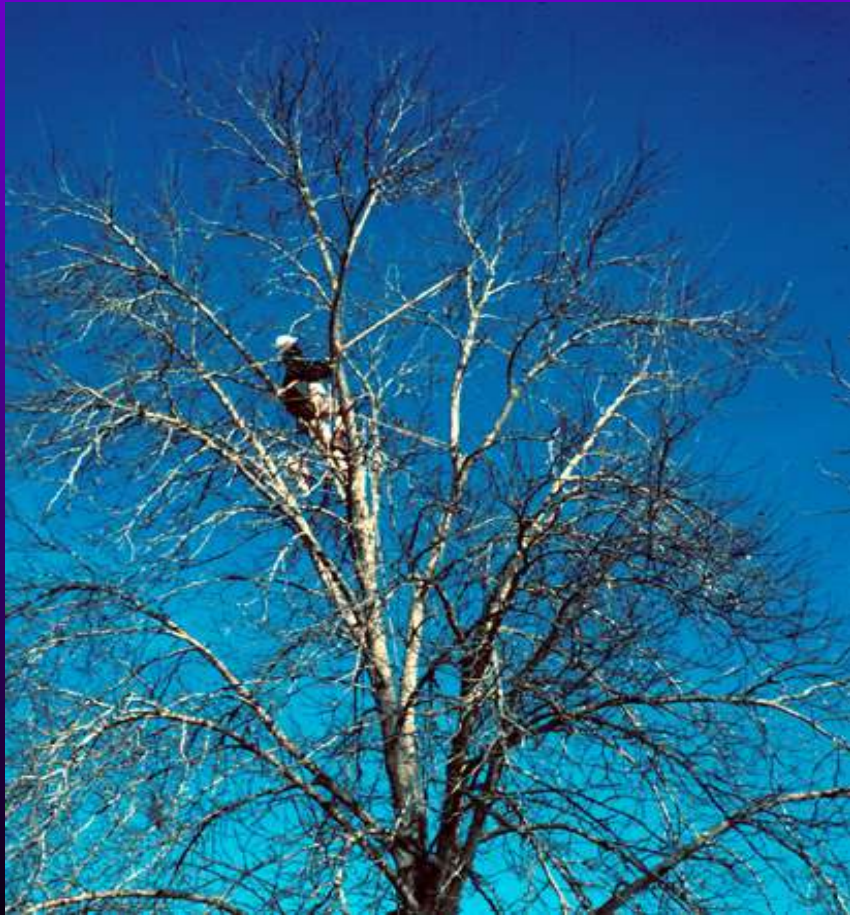


CROWN THINNING

- Not more than 25% of the foliage surface should be removed from an individual limb or from the entire crown during a single growing season.
- Thinning should result in an even distribution of branches on individual limbs and throughout the crown.

CROWN THINNING

- Thinning should be performed along the entire limb or leader. At least 50% of the foliage should be left on branches arising from the lower two-thirds of the limb and crown.



LIONSTAILING

Lionstailing is excessive thinning of interior branches leaving most growth on branch ends.

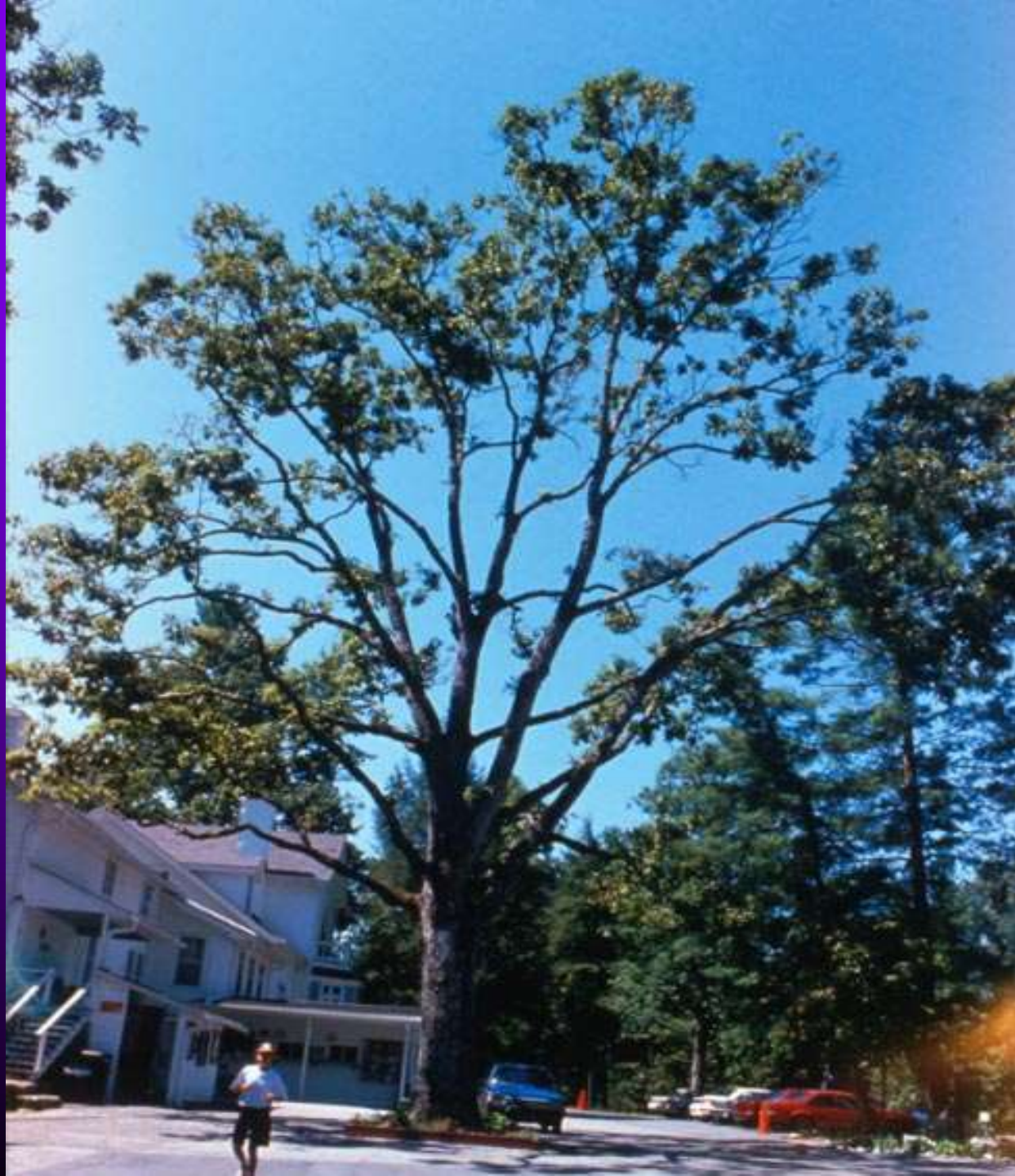
Lionstailing inhibits taper (diameter growth) and concentrates weight on branch ends which increases the risk of failures.

LIONSTAILING



TREE RESPONSE TO EXCESSIVE THINNING





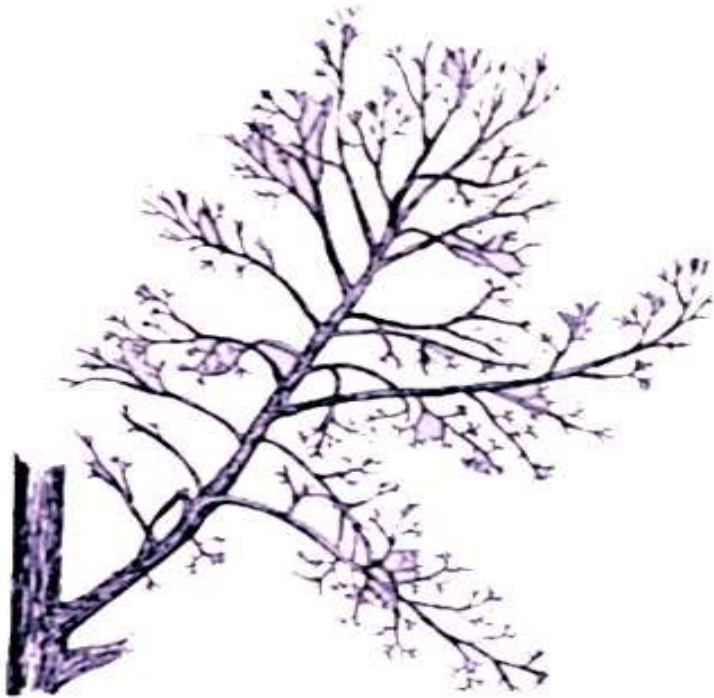
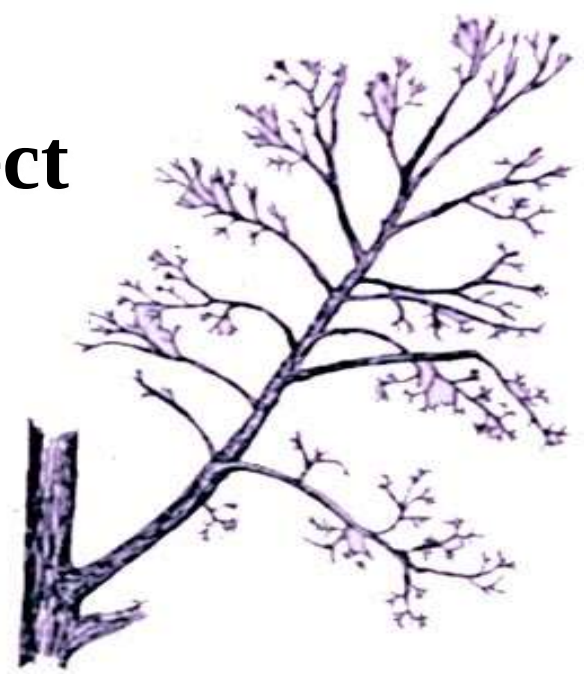
LIONSTAILING

- Concentrated Weight on Branch Ends
- Reduces Branch Taper

LIONSTAILING & EXTREME RAISING



Correct



BEFORE THINNING



**INCORRECT
THINNING
LIONSTAILING**

Reduce

- Reduction decreases the height and/or spread of a tree or individual branch or leader.
- The extent of reduction is specified by the arborist generally in length.

Crown Reduction

- **Clearance**
- **Compensate for structural weaknesses**
- **Shaping**

Cherry-Reduction

Before



After





HICKORY CROWN REDUCTION

BEFORE



AFTER



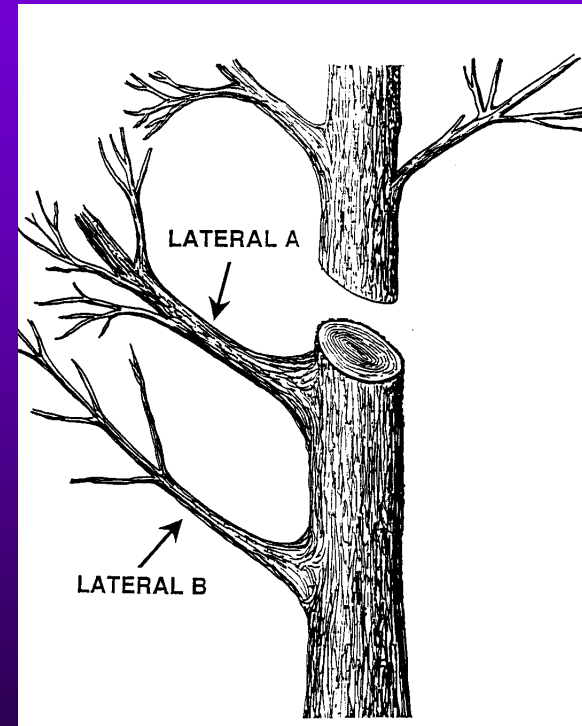


CROWN REDUCTION- CIRENCESTER



LATERAL CUT

- **SHORTENING A BRANCH OR STEM (LEADER) BY CUTTING TO A LATERAL BRANCH THAT IS LARGE ENOUGH TO ASSUME THE TERMINAL ROLE**



TOPPING





**TOPPING
CUTS ARE NOT
MADE AT A
LATERAL BRANCH**

CROWN RESTORATION

- **Crown Restoration is the improvement of the structure, form and appearance of trees which have been severely headed (topped), vandalized or storm damaged.**



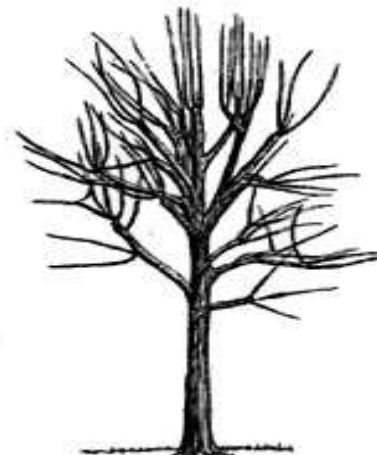
Tree Topped



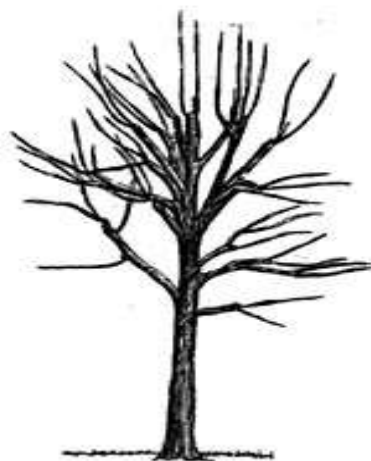
Before Pruning
1-2 years later



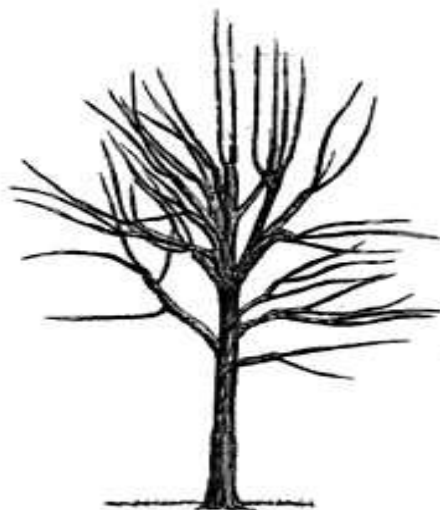
After Pruning



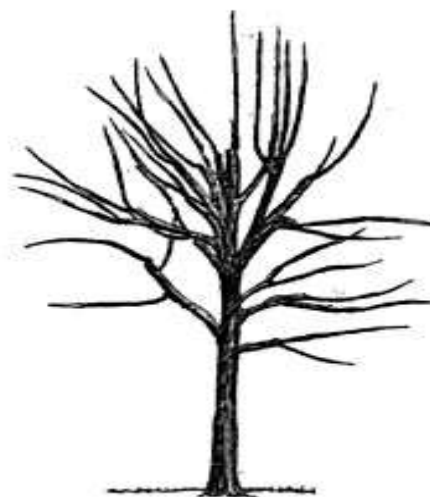
Before Pruning
2-3 years later



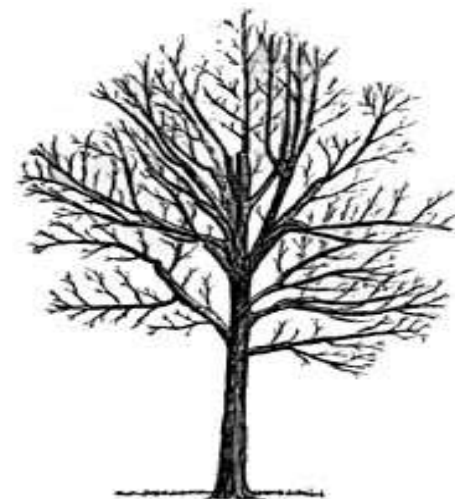
After Pruning
2-3 years later



Before Pruning
3-4 years later



After Pruning

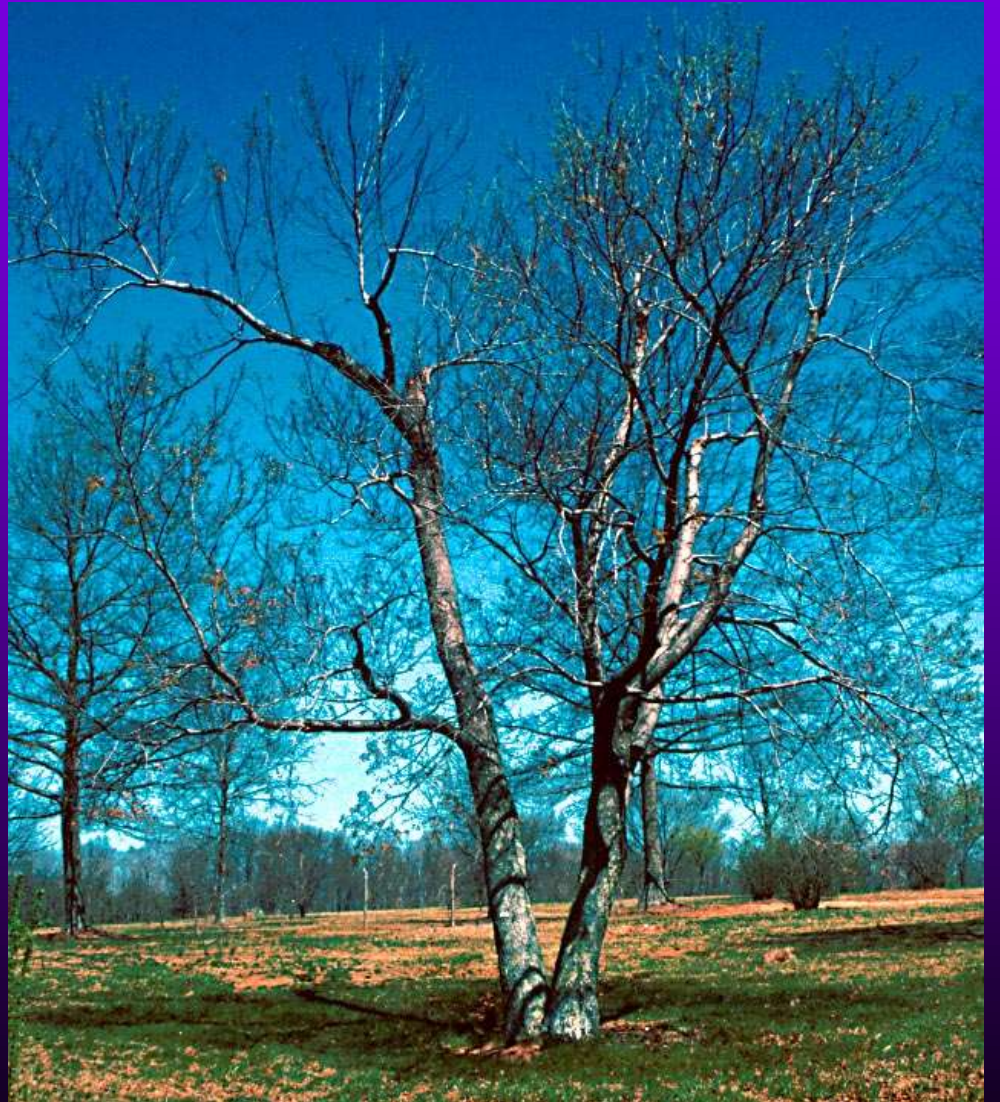


With Secondary
branches

CROWN RESTORATION

- **Crown Restoration involves selectively removing sprouts from branch stubs leaving 1-3 sprouts. Remaining sprouts may require lateral pruning or heading to control rapid growth and encourage branching.**





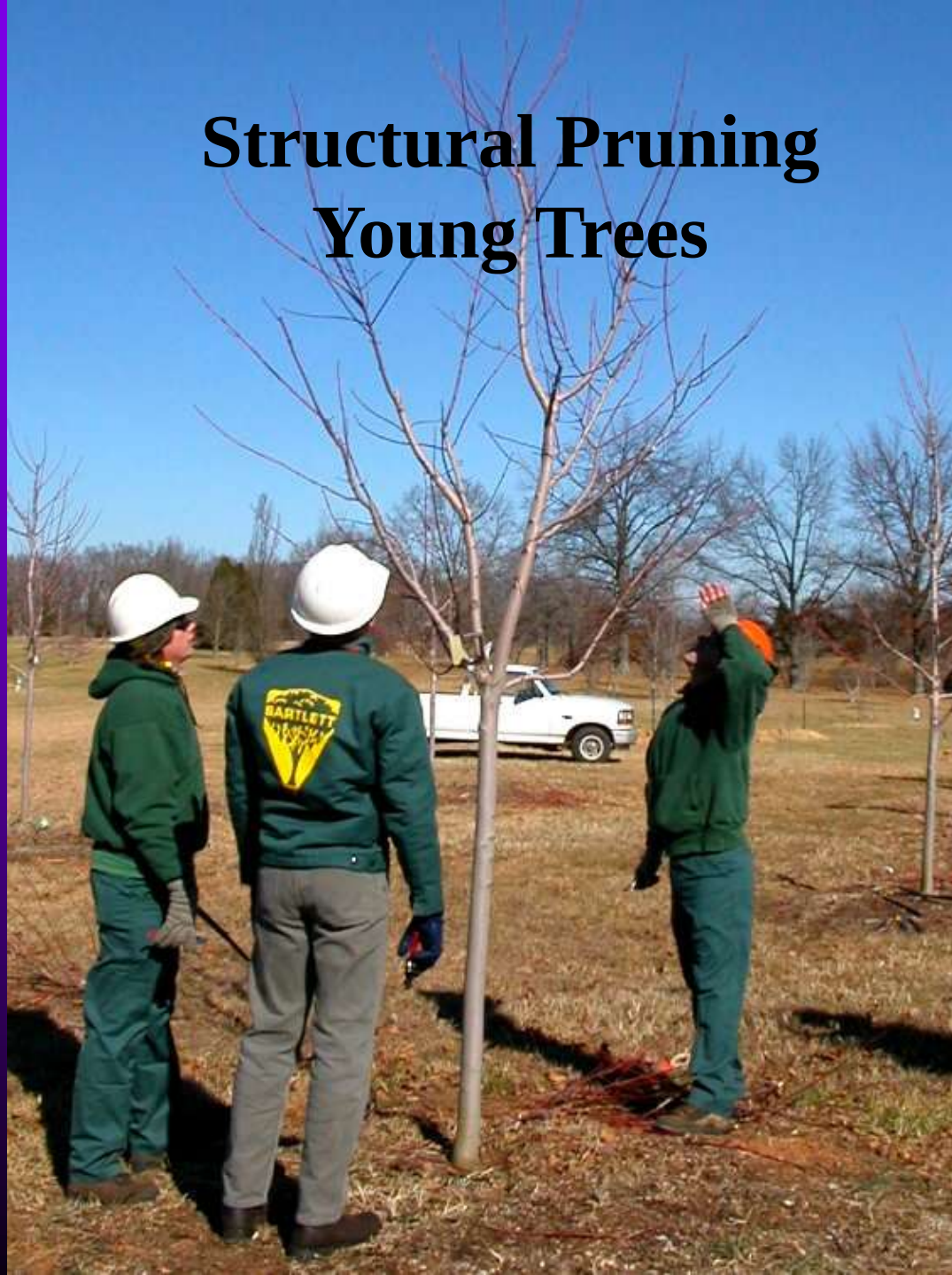








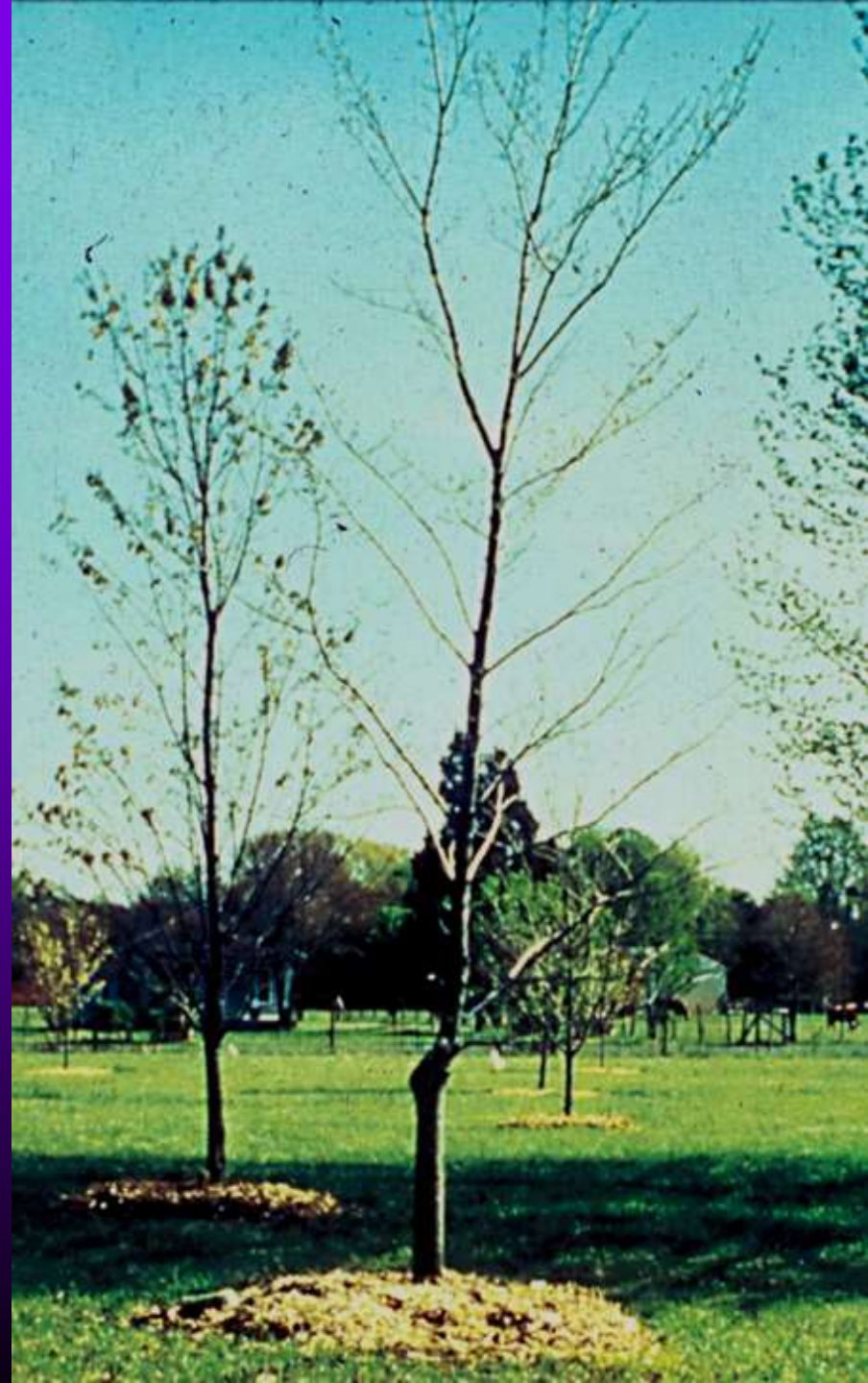
Structural Pruning Young Trees



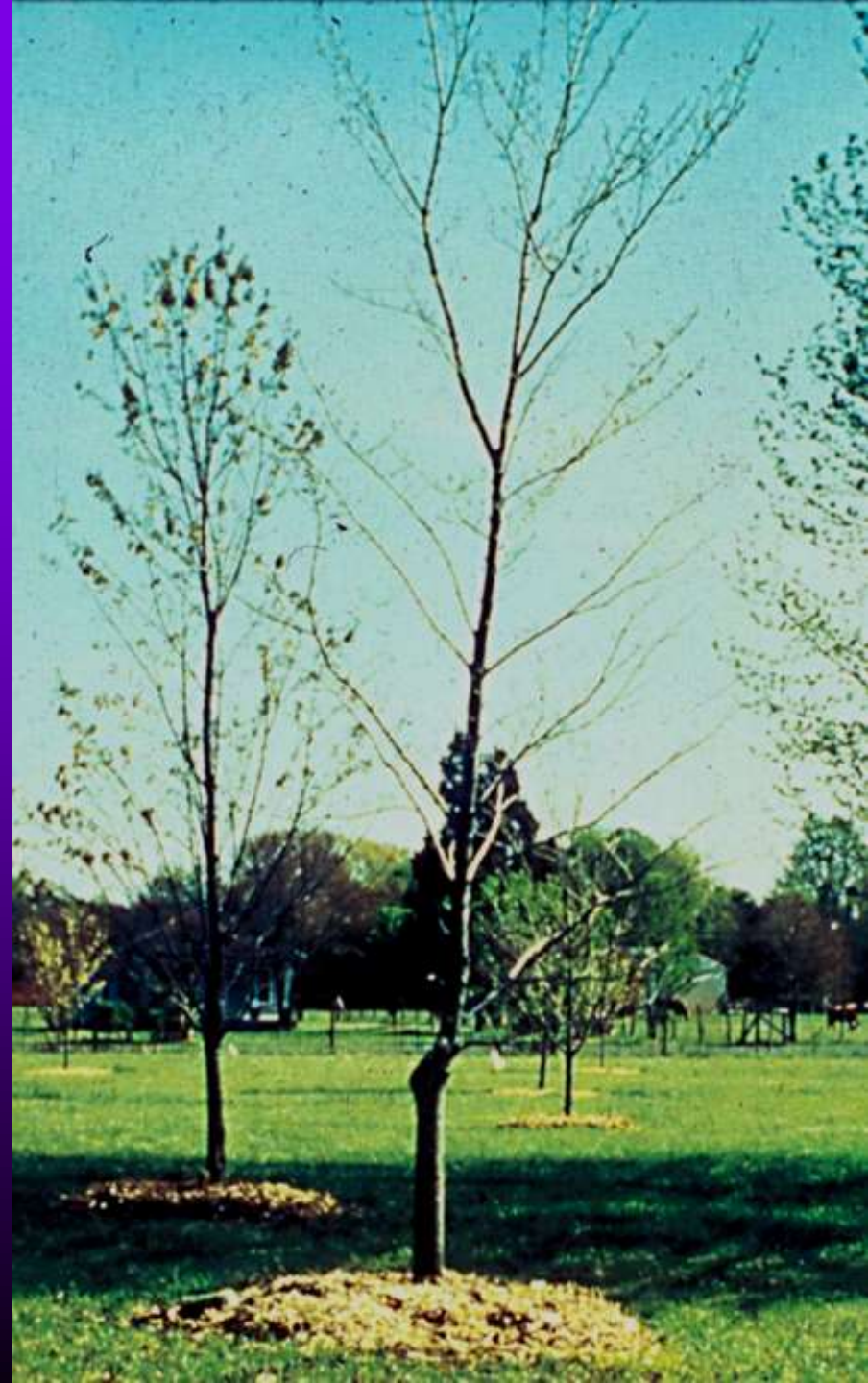
Structural Concerns

Maintain a strong central leader on species that are intended to be single stem

Red Maple



Red Maple



3 years later



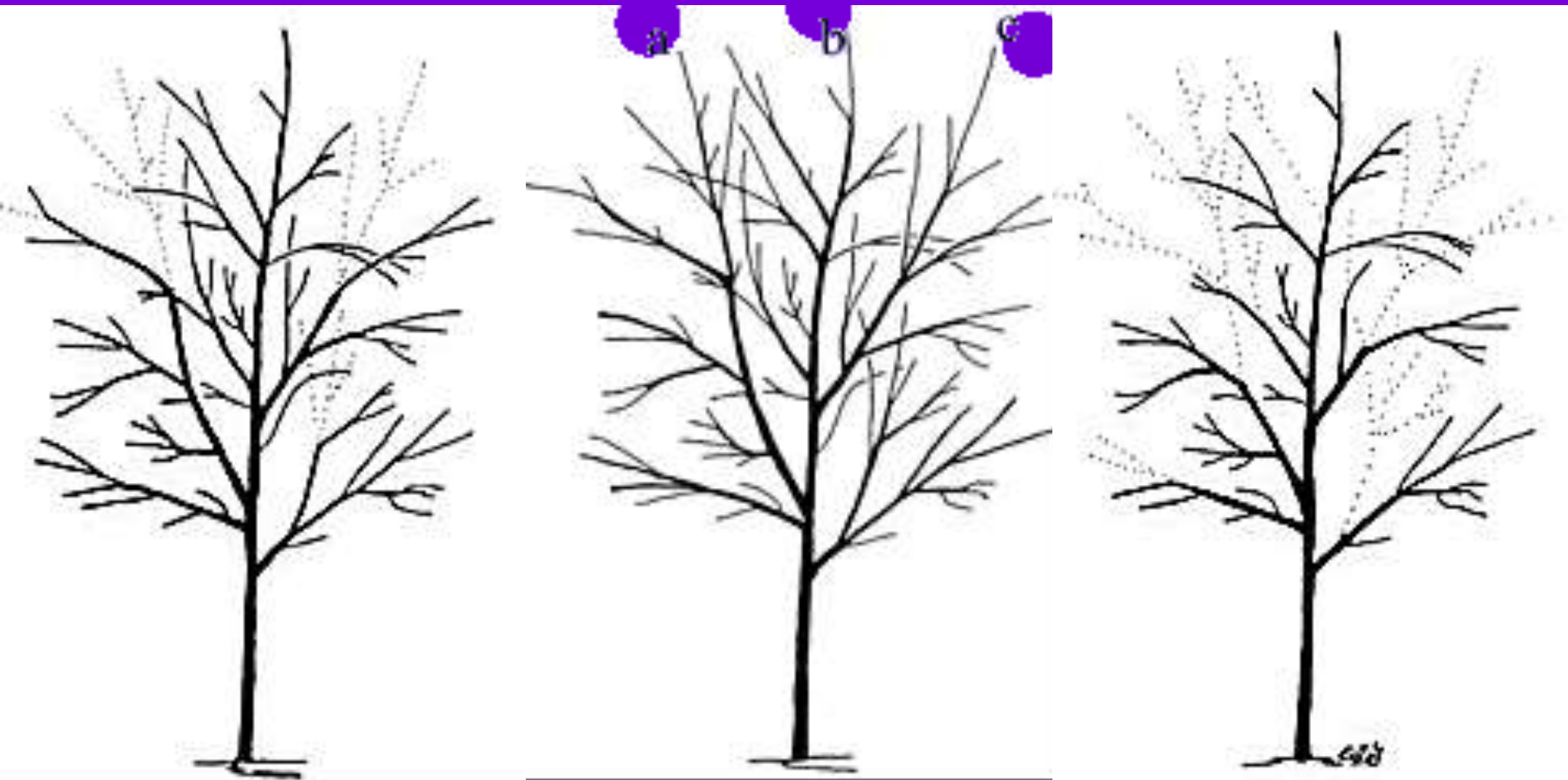
5 years later







Young tree pruning

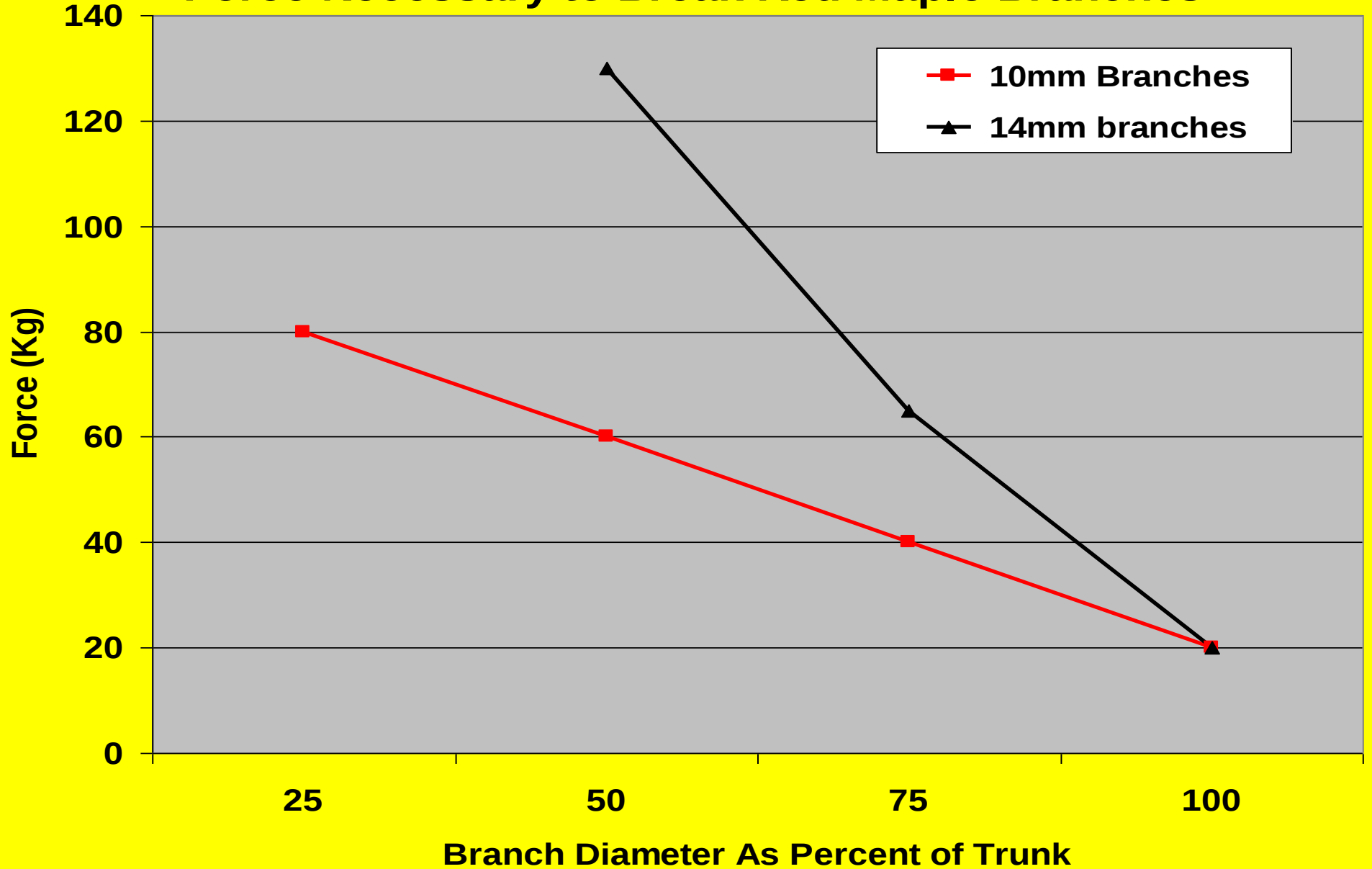


Pruning

- Research by Dr. Ed Gilman at the University of Florida shows that as branch diameter increases relative to the stem diameter at the attachment, the strength of the attachment decreases.



Force Necessary to Break Red Maple Branches



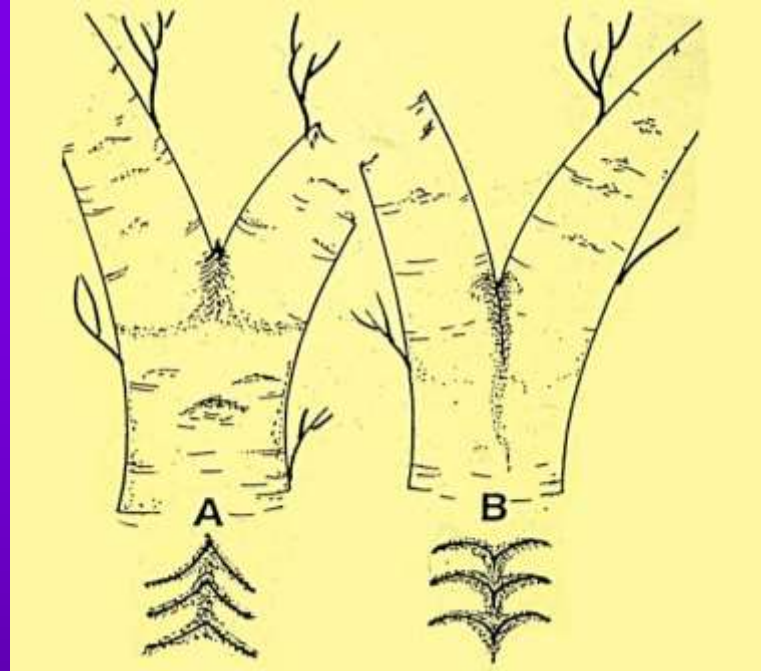
**Subordinate fast growing lateral branches
Diameter of Lateral branches should not exceed
50% of stem diameter at point of attachment**







**Select permanent branches
that are structurally sound**



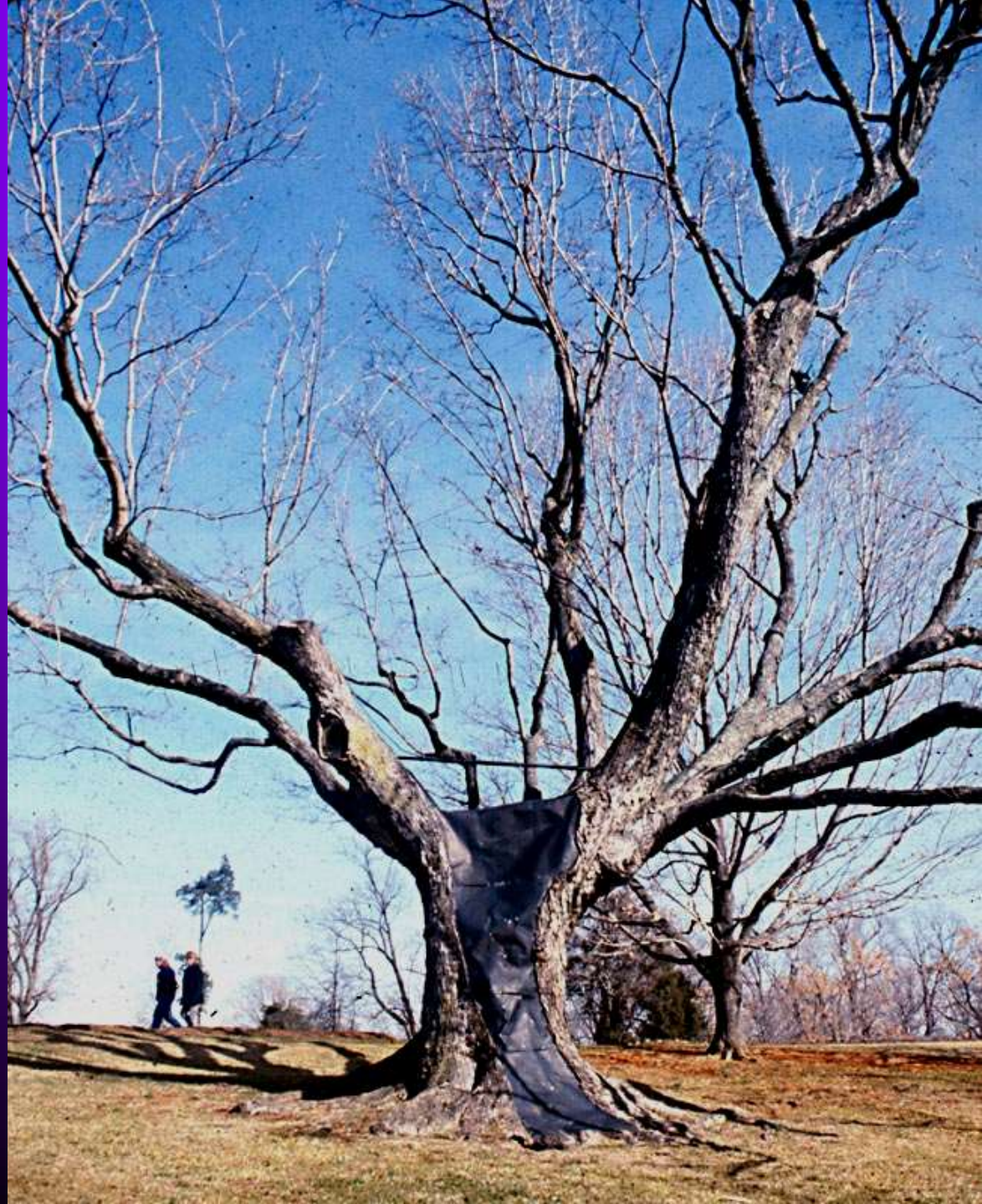
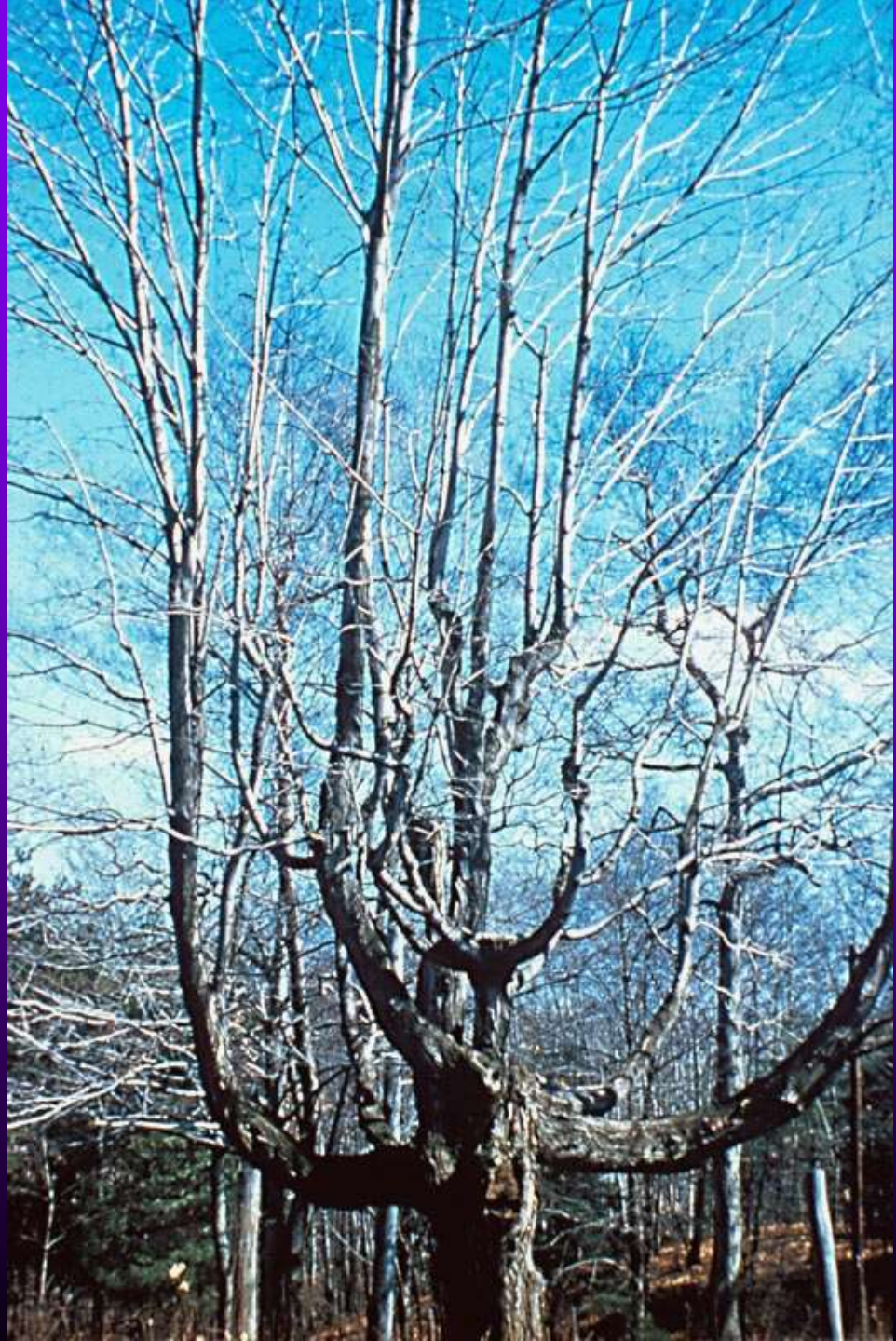
Provide Adequate Spacing For Scaffold Limbs



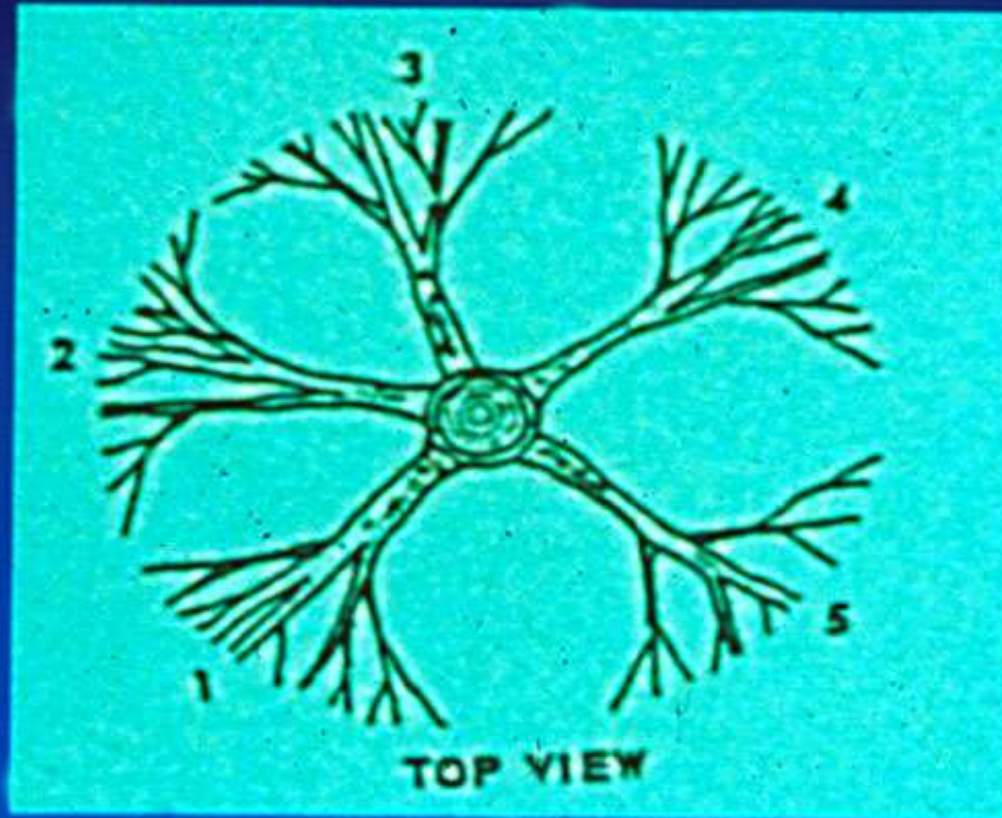
- 6 to 8 inches for small trees
- 18 inches for large trees







Maintain



Radial symmetry



Maintain Foliage Distribution

- **Branches should be evenly distributed through the crown.**
- **Maintain live crown ratios of more than 50% of the stem and branches.**







**Delay Removing Lower
Branches**



Maintain Natural Form





