

# Planting & Pruning Trees

U/I – WSU

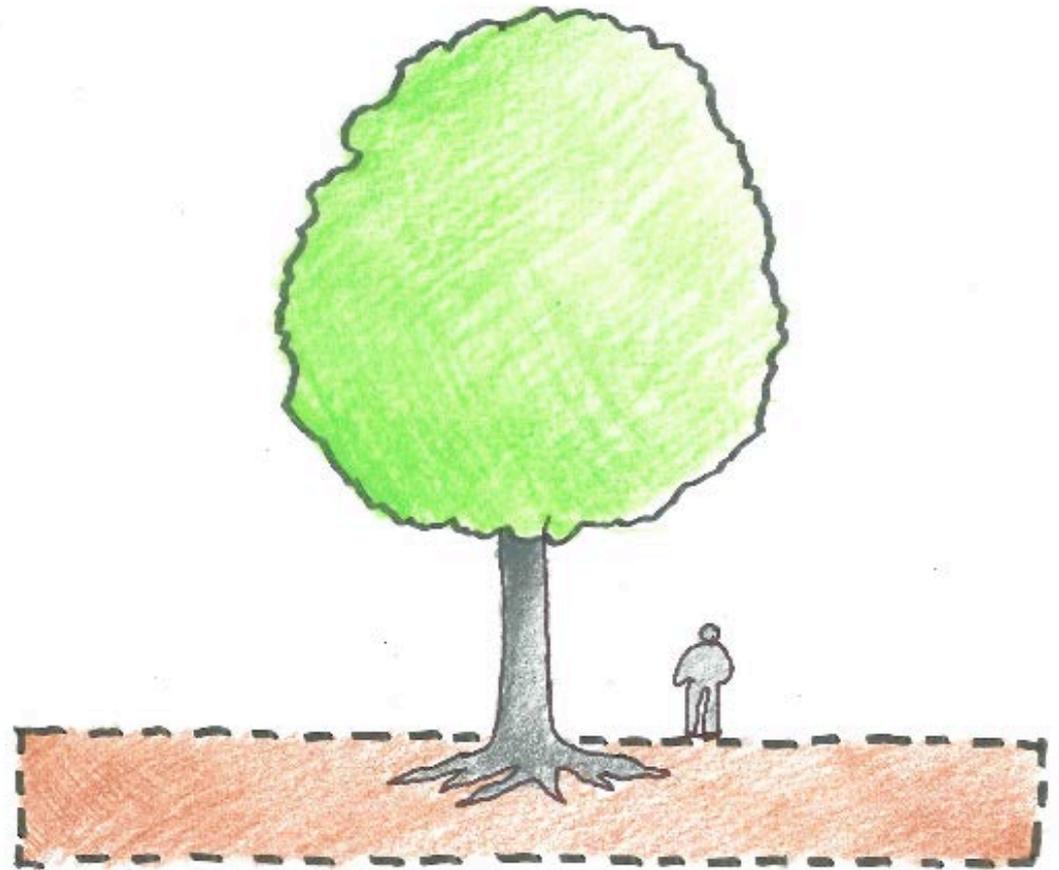
Master Gardener

Training

February 25, 2020



Philip Shinn  
Formerly  
PN-7642-A



# WSU Urban & Community Tree Stewardship Certification

- Online training
- Become a Certified Tree Steward
- Developed by WSU and ISA
- MG earn 20 hours CEC
- Non MGs \$150
- MGs \$100

<https://s3.wp.wsu.edu/uploads/sites/2074/2020/02/Flier-with-Registration-2-2020.pdf>

Or search for WSU Tree Steward

The flier is a promotional document for the 'Urban & Community Tree Stewardship Online Training' program. At the top, it features the Washington State University Extension logo and a circular seal. The title 'Urban & Community Tree Stewardship Online Training' is prominently displayed. A central image shows a large, leafy tree in a residential setting. A yellow starburst graphic on the right side of the image contains the text 'Register Online Now: <https://wsuonline.wsu.edu>'. Below the image, there is an 'ABSTRACT' section and a 'TREE STEWARDS' section with a Venn diagram. The 'FUNDING/PARTNERSHIP' section lists 'WA DNR', 'USDA FS', and 'WSU Extension'. The 'THE TRAINING' section includes a table of modules and presentations. The 'THE TEAM' section features a map of Washington state and a list of names. The 'Results' section describes the benefits of the training. At the bottom, there is a list of names and a small disclaimer.

**WASHINGTON STATE UNIVERSITY** EXTENSION

**Urban & Community Tree Stewardship Online Training**

**Register Online Now:**  
<https://wsuonline.wsu.edu>

**ABSTRACT**  
There are many known benefits to trees in urban and community landscapes from increased property values to increased health and well-being. The mission of the Urban & Community Tree Stewardship online training is to provide education to Extension Master Gardener, landscape professionals, and interested members of the public in proper community tree care in their communities. What makes this training unique is that it's designed to not only teach the fundamental principles of tree biology and plant health care, but to also give people the tools to become advocates for trees in their communities.

**TREE STEWARDS**

**FUNDING/PARTNERSHIP**

**THE TRAINING**

**THE TEAM**

**Results**

**THE TEAM**  
The curriculum was created by a WSU Extension team from across the state.

**Results**  
The online training will empower Extension Master Gardeners, landscape professionals, and members of the community to become knowledgeable advocates for, and stewards of, trees in their communities. Earning the Urban & Community Tree Stewardship Certification by completing the training will provide credibility that can lead to opportunities to speak about the many benefits of trees, and, from provide guidance on urban tree best management practices.

Professional landscapers will be able to add the Certification to their resume demonstrating technical knowledge and skill that can help them gain new clients.

**Panel Debra, Tim Kofhusik, Nicole Martin, Marianne Ogheworth, Charles Brax, Sheila Gray, Ann Thompson, and Linden Lammann.**

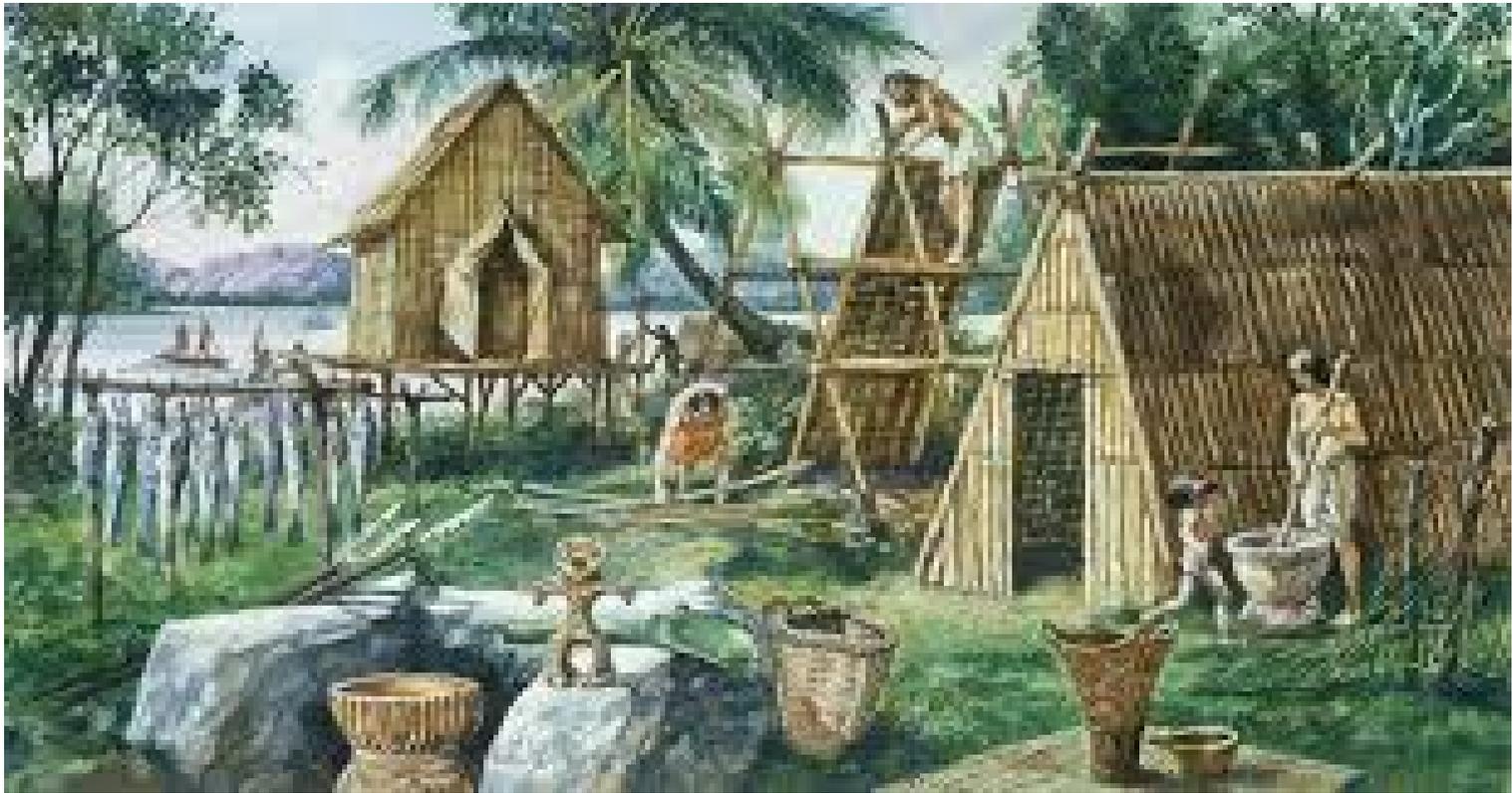
WSU and WSU Extension programs and employees are recipients of all federal, state and local funds. Endorsement of associations may be reported through state tree Extension Office.



Jim Urban image

# Generations Have Planted & Pruned Trees

Archeologists find evidence of Neolithic people managing trees 6,000 years ago



**The Romans found the English Country side  
divided by Hedge Rows 57 BC**



It's Not Rocket  
Science!





**Landscape trees failing to thrive**

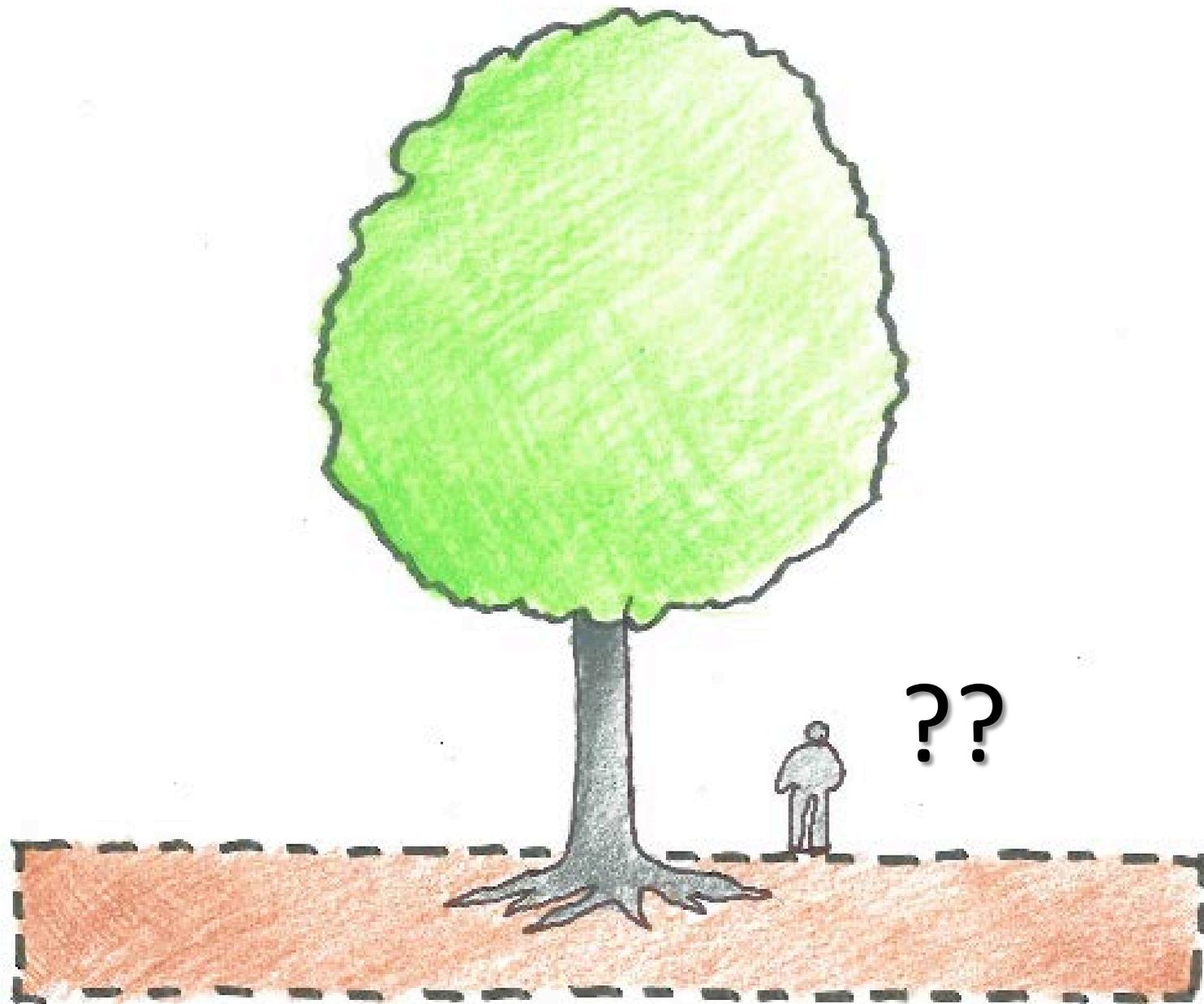


**One half of  
otherwise healthy  
established trees  
begin to die**



**Gary Johnson, University of Minnesota, noticed 25 year old landscape trees falling down for no reason.**

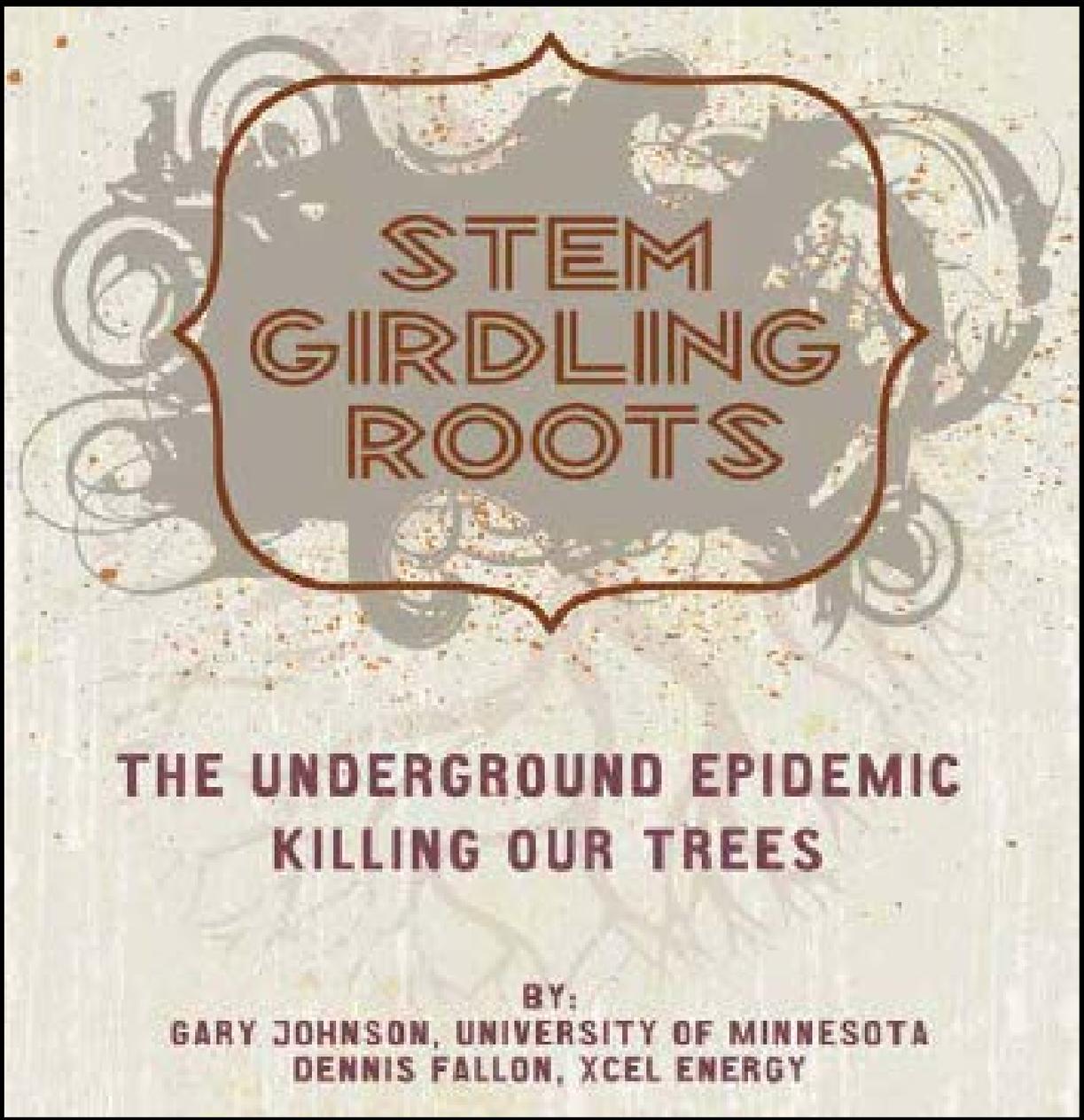
Jim Urban Image



Jim Urban, image



Jim Urban images



**STEM  
GIRDLING  
ROOTS**

**THE UNDERGROUND EPIDEMIC  
KILLING OUR TREES**

**BY:  
GARY JOHNSON, UNIVERSITY OF MINNESOTA  
DENNIS FALLON, XCEL ENERGY**

# Two causes of – SGR



# Planting Too Deeply

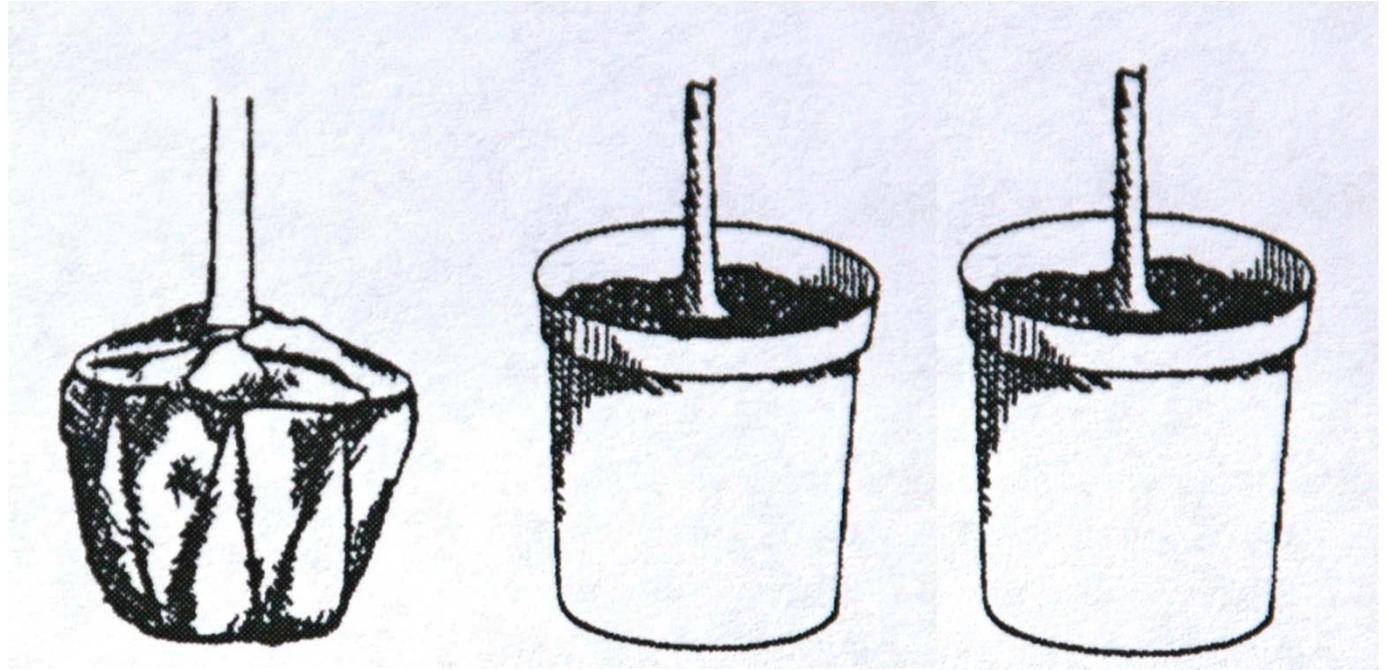




**Failure to correct root problems at planting**



# Modern nursery stock – Available four ways



Bare Root

Balled and Burlapped

Container Grown

Containerized



# Container Grown Plant Material

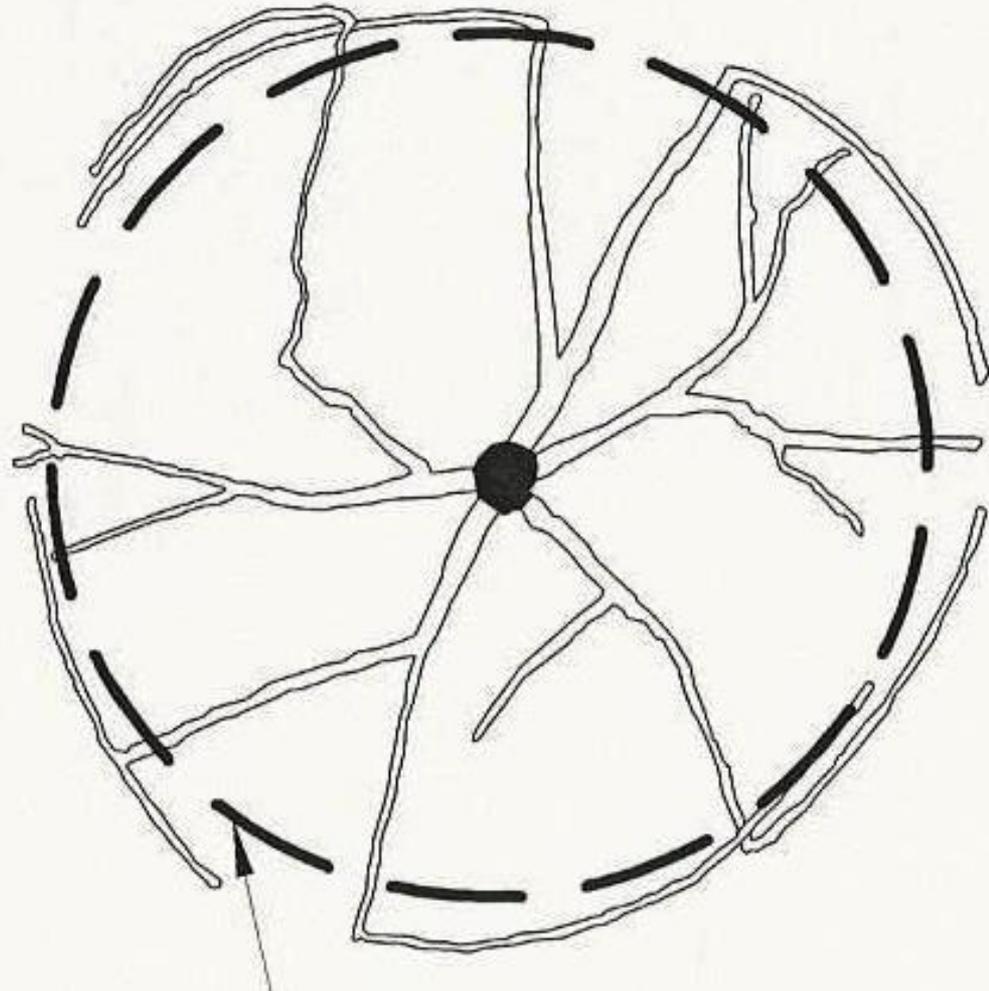


**Dr. Bruce Fraedrich  
Barttlet Tree Company  
2007**



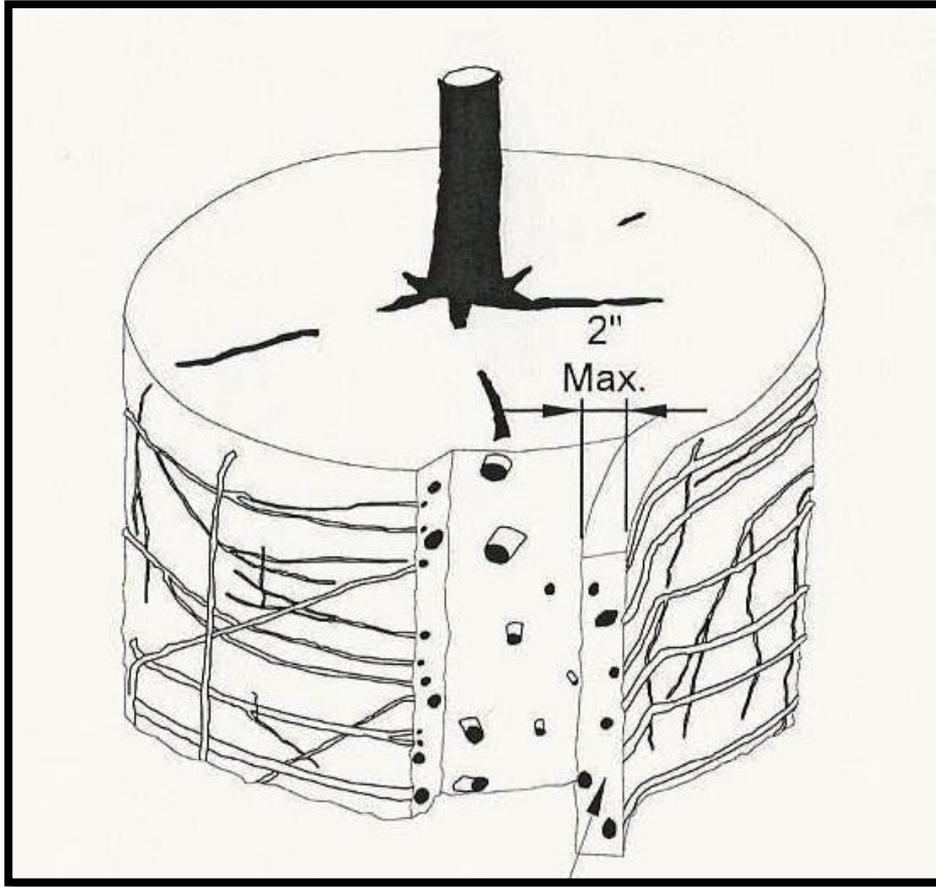
# Circling Roots = Premature Death



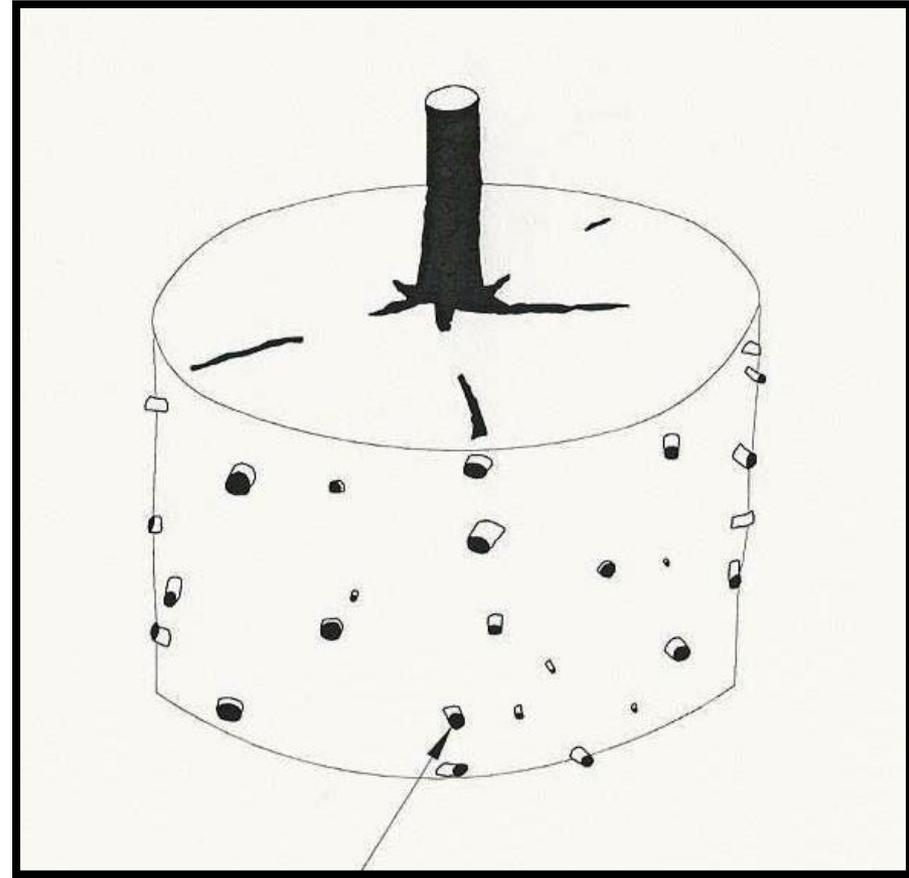


# Shave Circling Roots

- Sharp shovel
- Hand pruners
- Loppers



**Root Ball**



**Ready for planting**



# Balled and Burlaped Plant Material

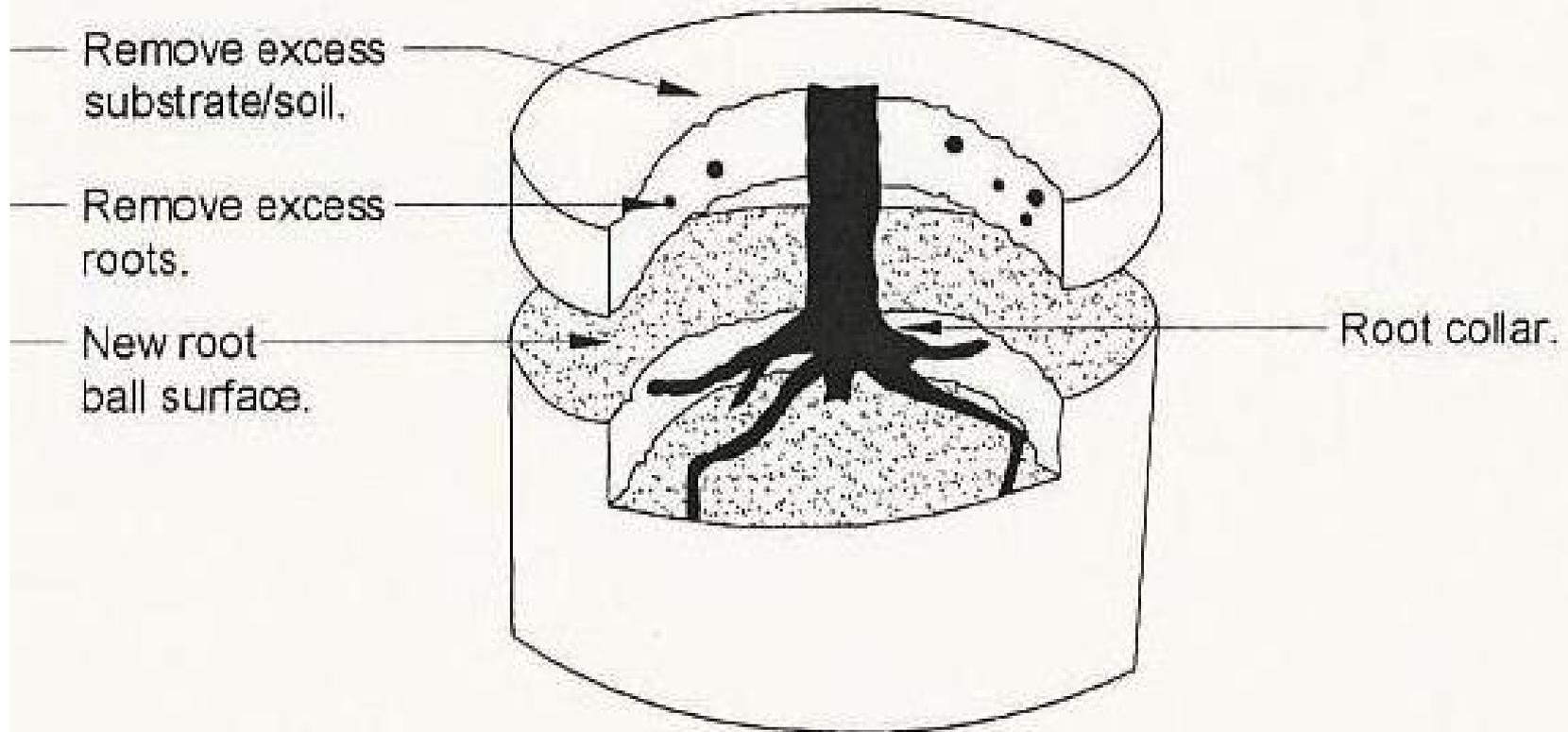


# Tree Spade



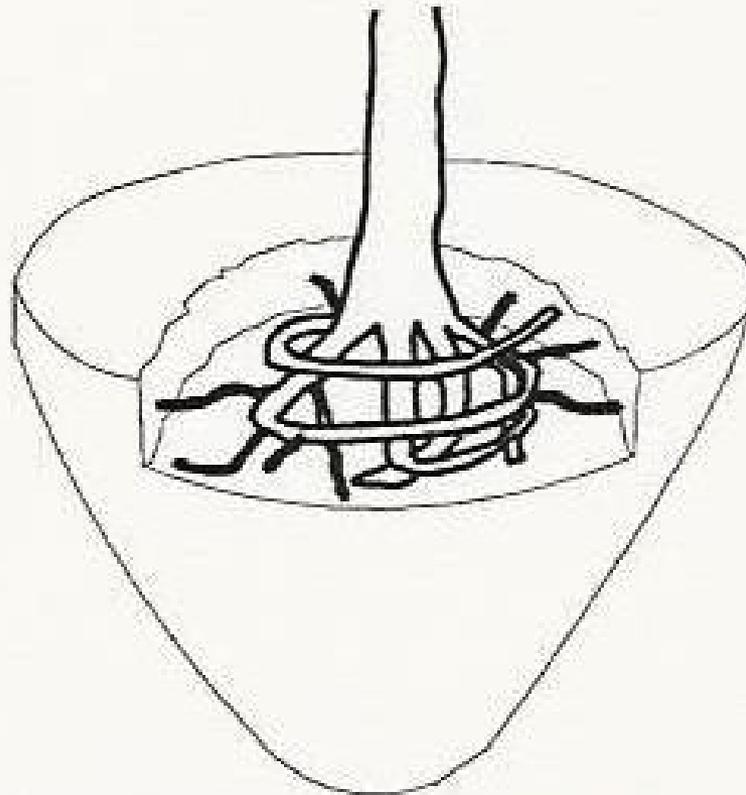


**Remove Burlap, Wire, Twine At Planting**



Tree planted too deeply in root ball.  
Remove excess substrate and roots to  
meet root inspection detail.

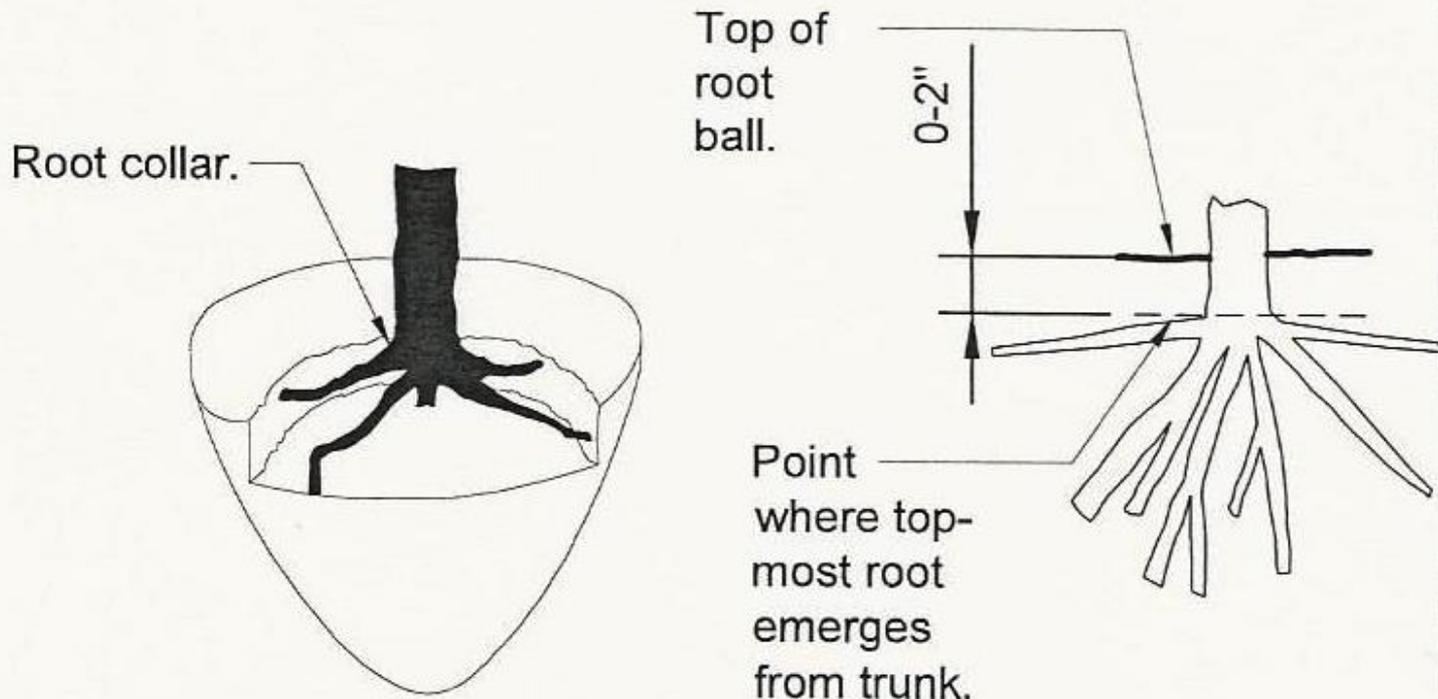
REJECT,



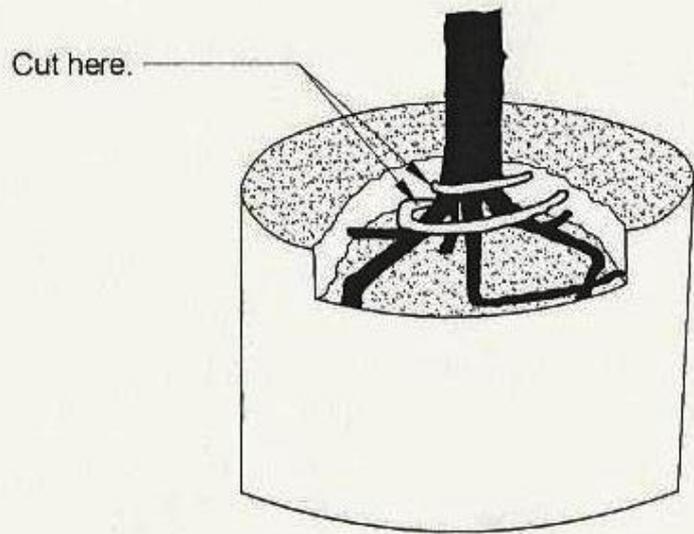
Absorbi

Structural roots circle interior of root ball. No structural roots are horizontal and reach the root ball periphery near the top of the root ball.

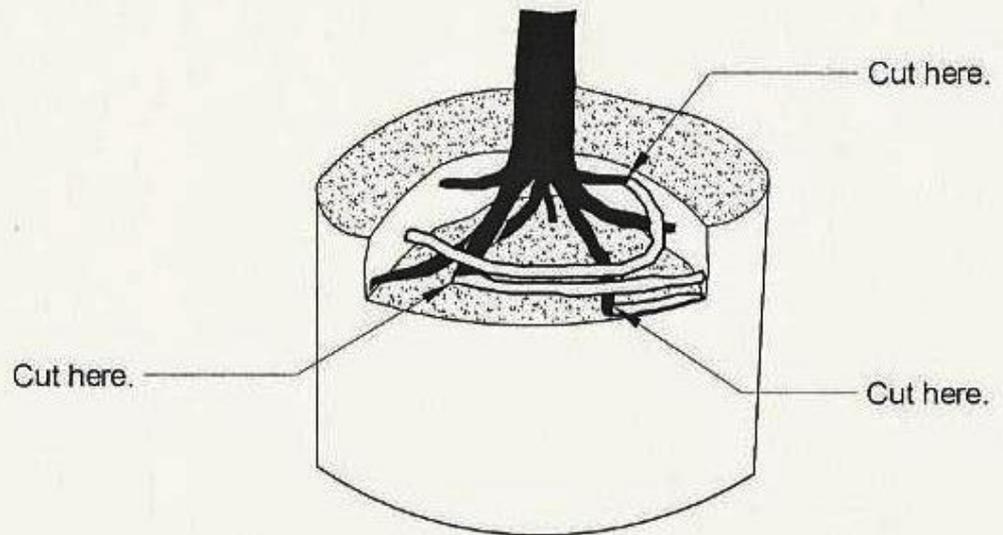
## ACCEPTABLE



The point where top-most root(s) emerges from the trunk (root collar) should be within the top 2" of substrate. The root collar and the root ball interior should be free of defects including circling, kinked, ascending, and stem girdling roots. Structural roots shall reach the periphery near the top of the root ball.



Six structural roots shown in black. Remove roots (white) growing over root collar by cutting them just before they make an abrupt turn.



Seven structural roots shown in black. Remove structural roots (white) growing around or over root collar by cutting them just before they make an abrupt turn.

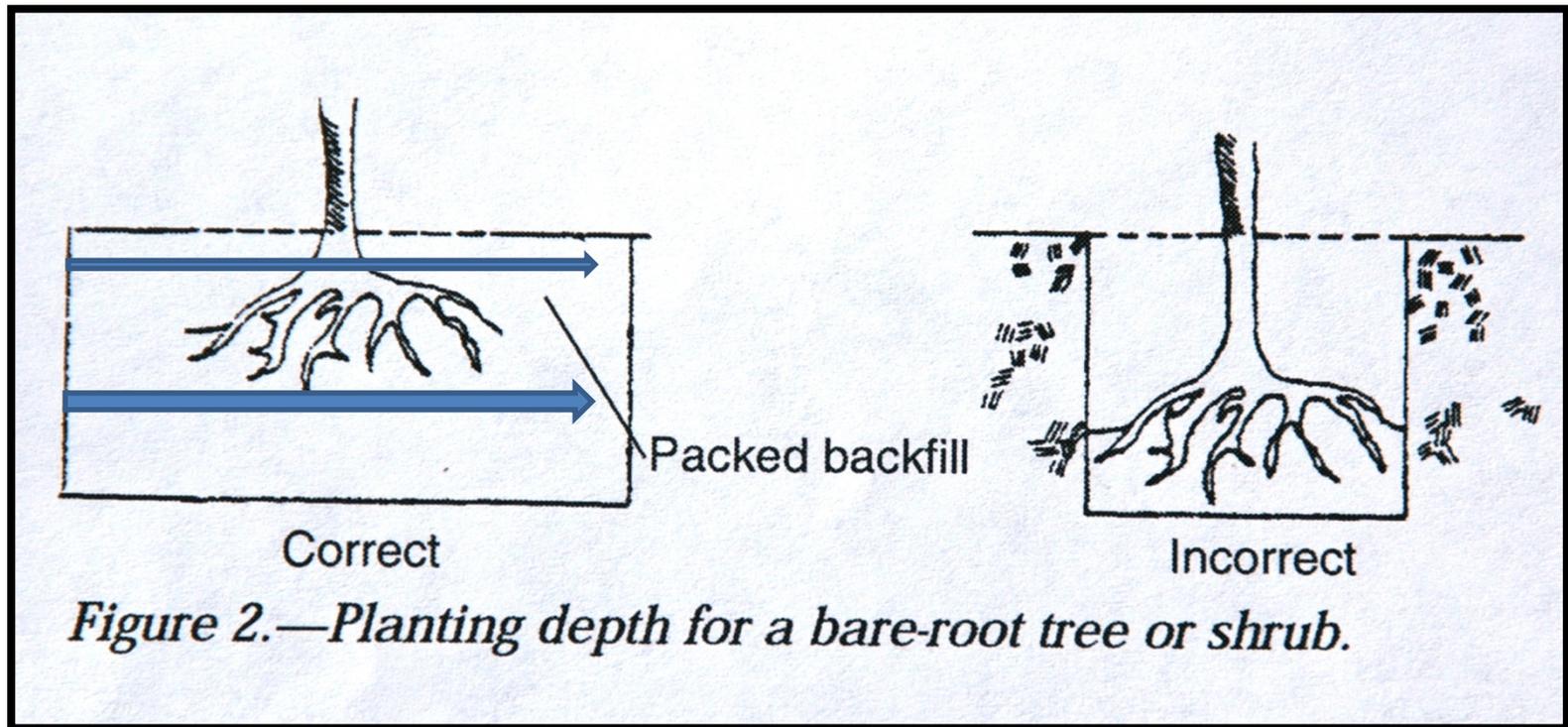




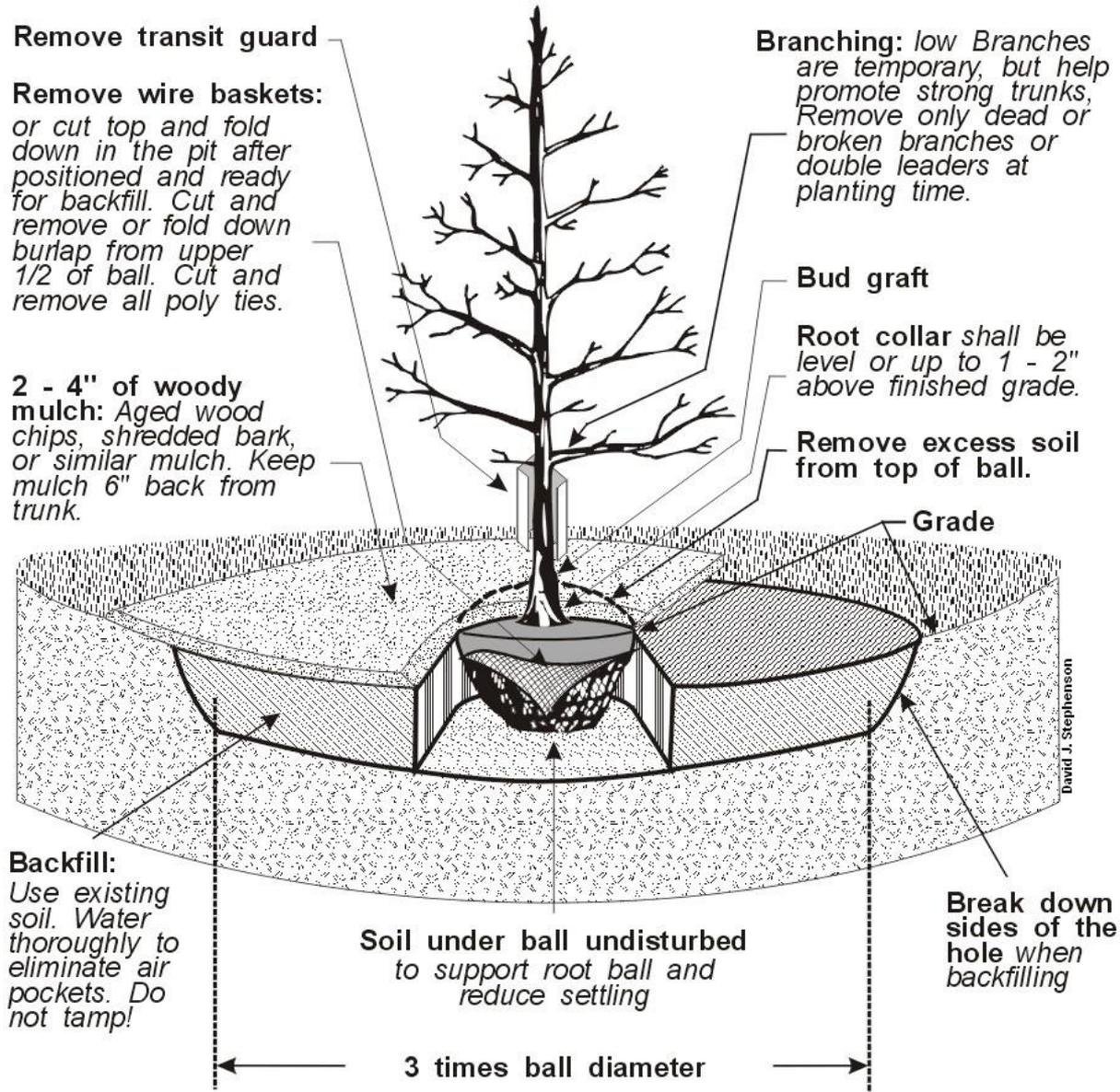
Jim Urban image

# Bare Root Nursery Stock

# Plant At The Proper Depth



# Proper Tree Planting Diagram







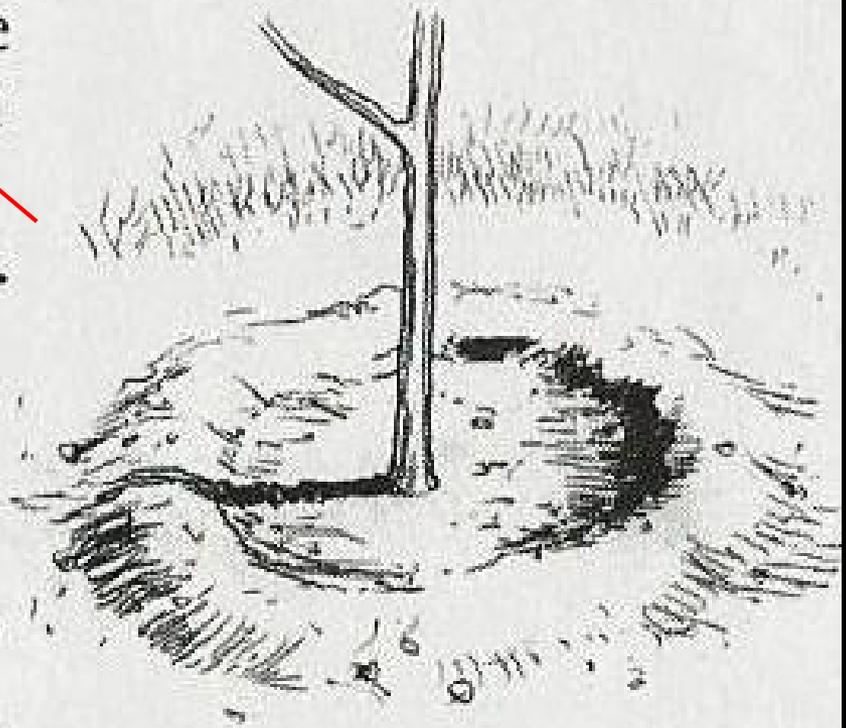
# Amended Backfill? **No Way!** – Soil Basin? **Yes!**

## ***Backfill***

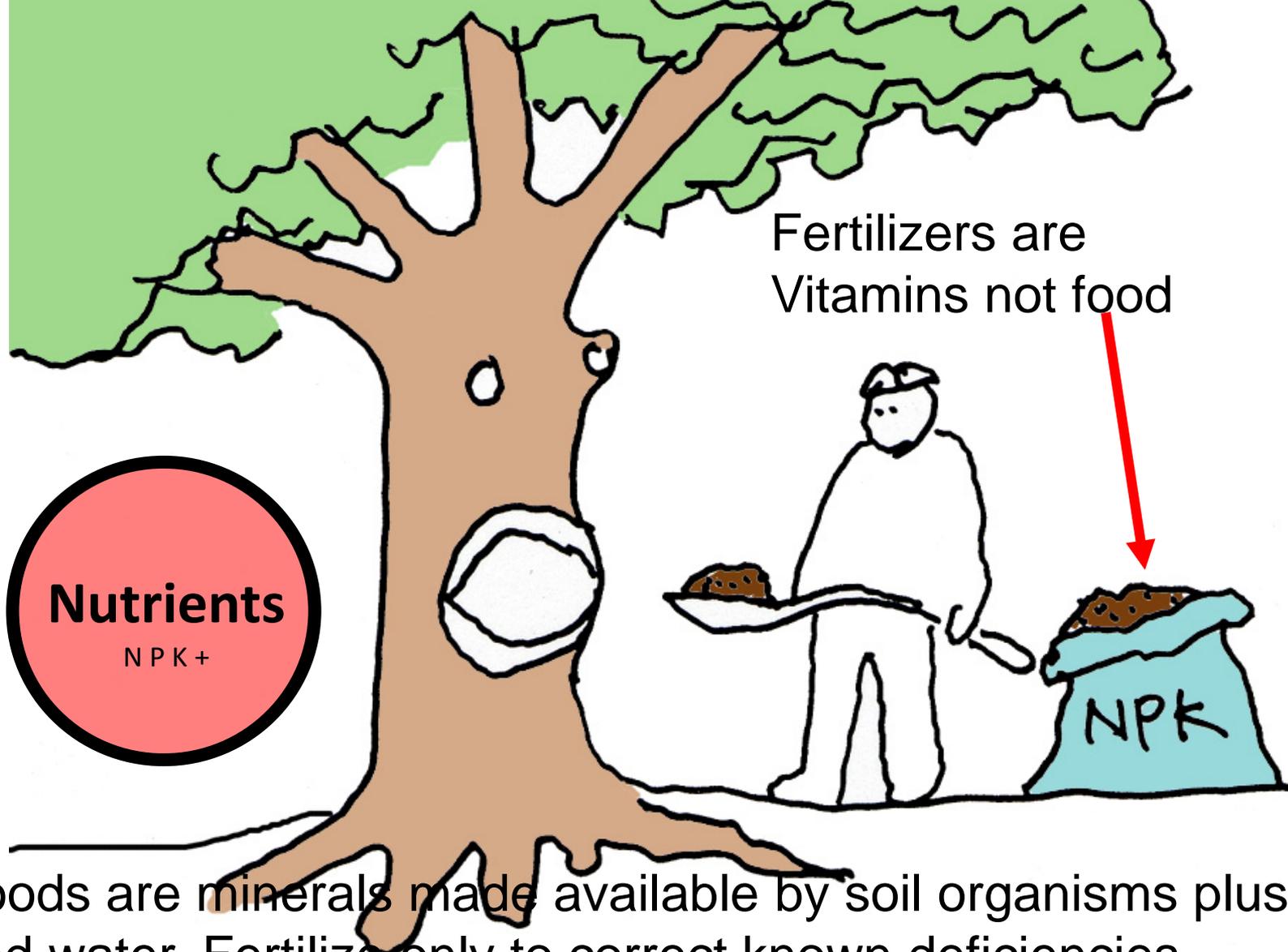
the hole with a mix of 50 percent native soil and 50 percent amendment, such as organic compost.

## ***Form***

a basin of soil around the tree to keep water concentrated on the roots.



# Trees Feed Can Themselves!

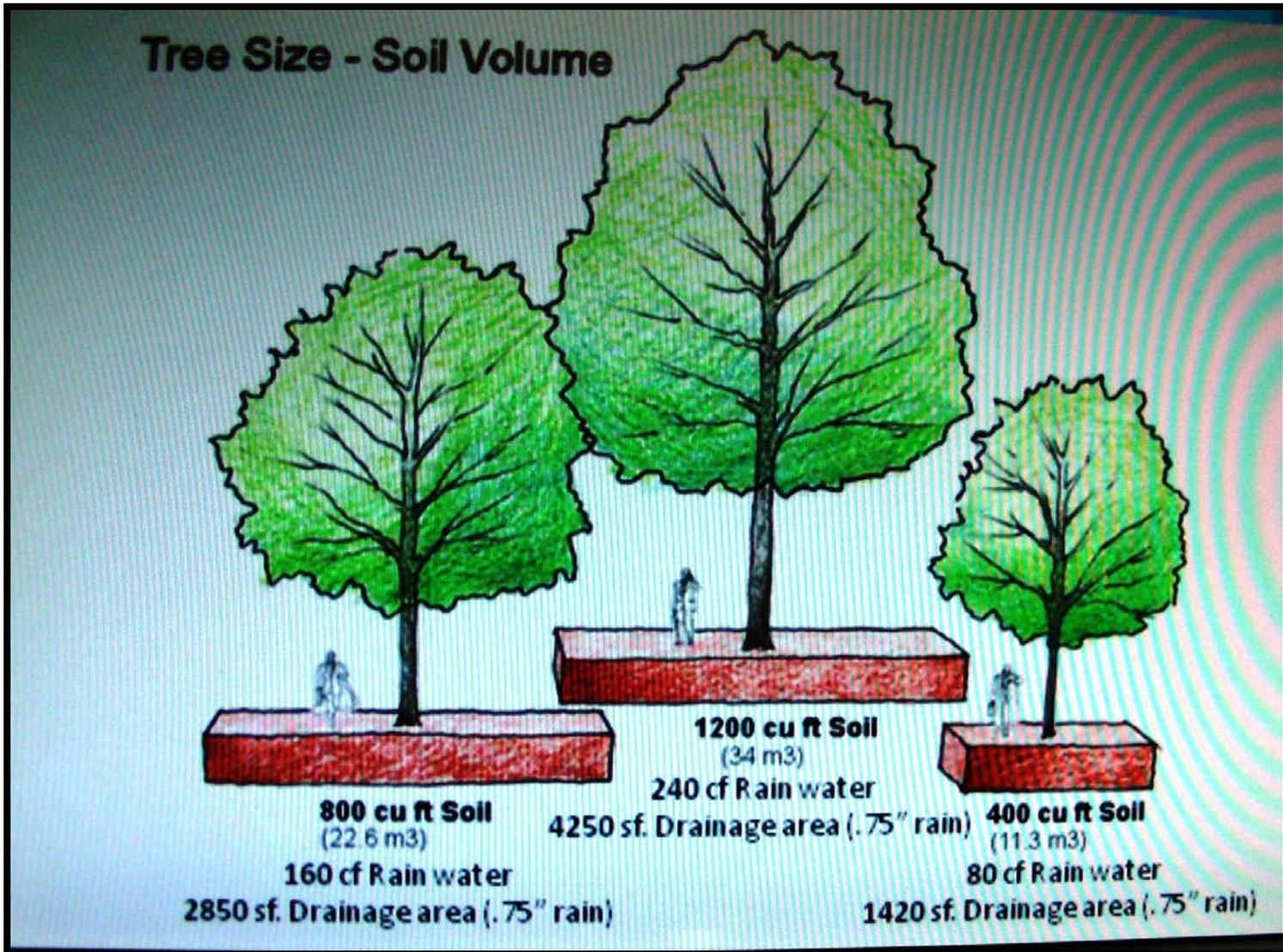


Fertilizers are  
Vitamins not food

**Nutrients**  
NPK+

Foods are minerals made available by soil organisms plus air and water. Fertilize only to correct known deficiencies.

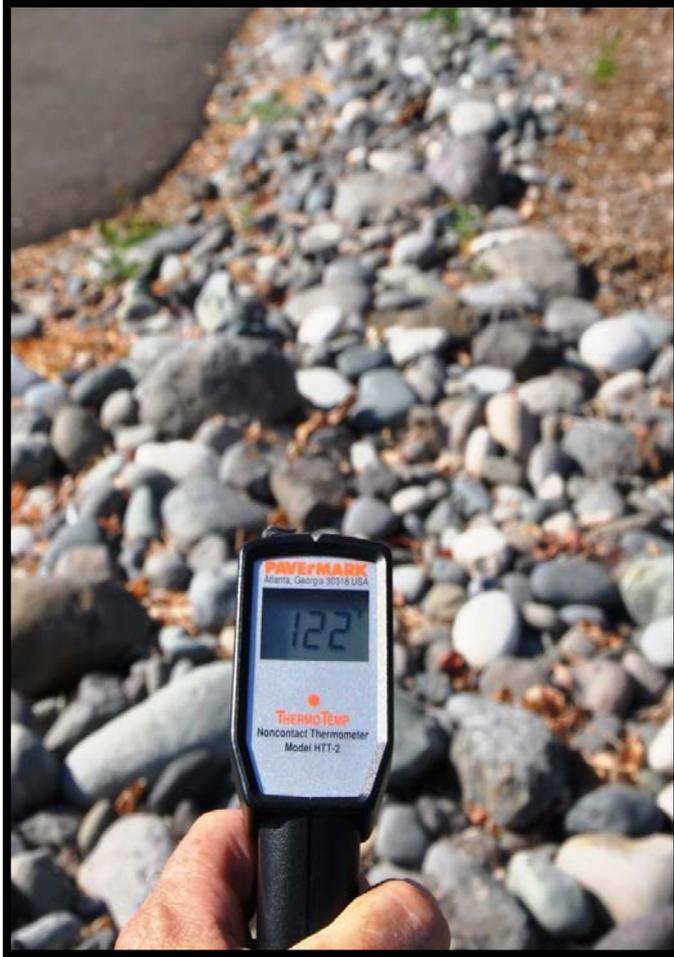
# Got Soil? – Urban trees need soil!



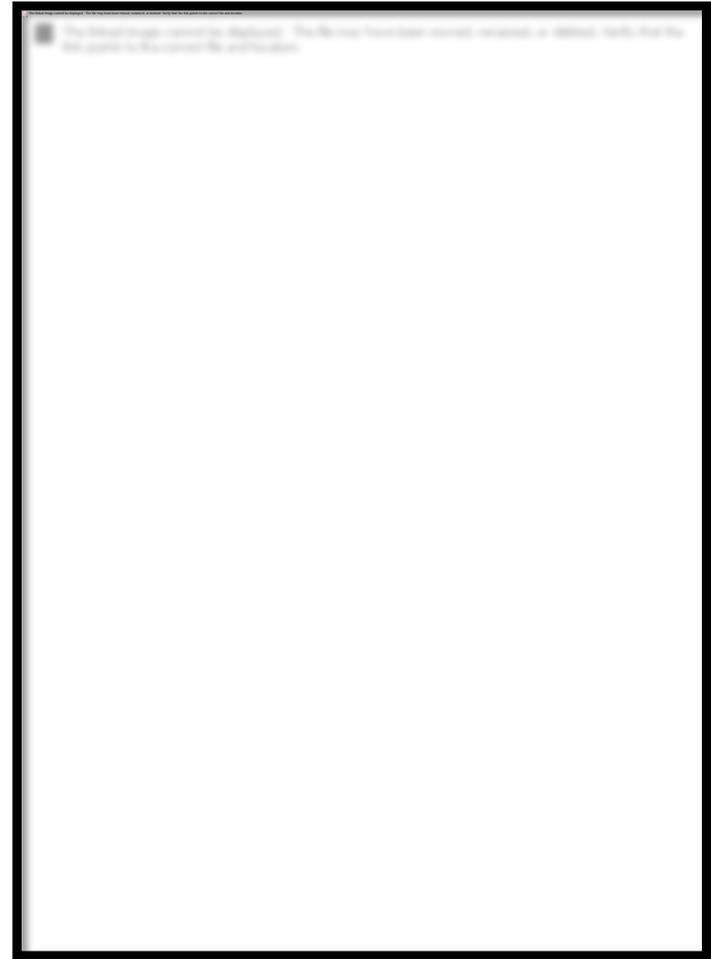


The People Who  
Plant and Guy  
Trees Are Not  
Necessarily The  
Ones Who Will  
Care For The  
Landscape In The  
Long Run

# Rocks Are Not Mulch



# Better?



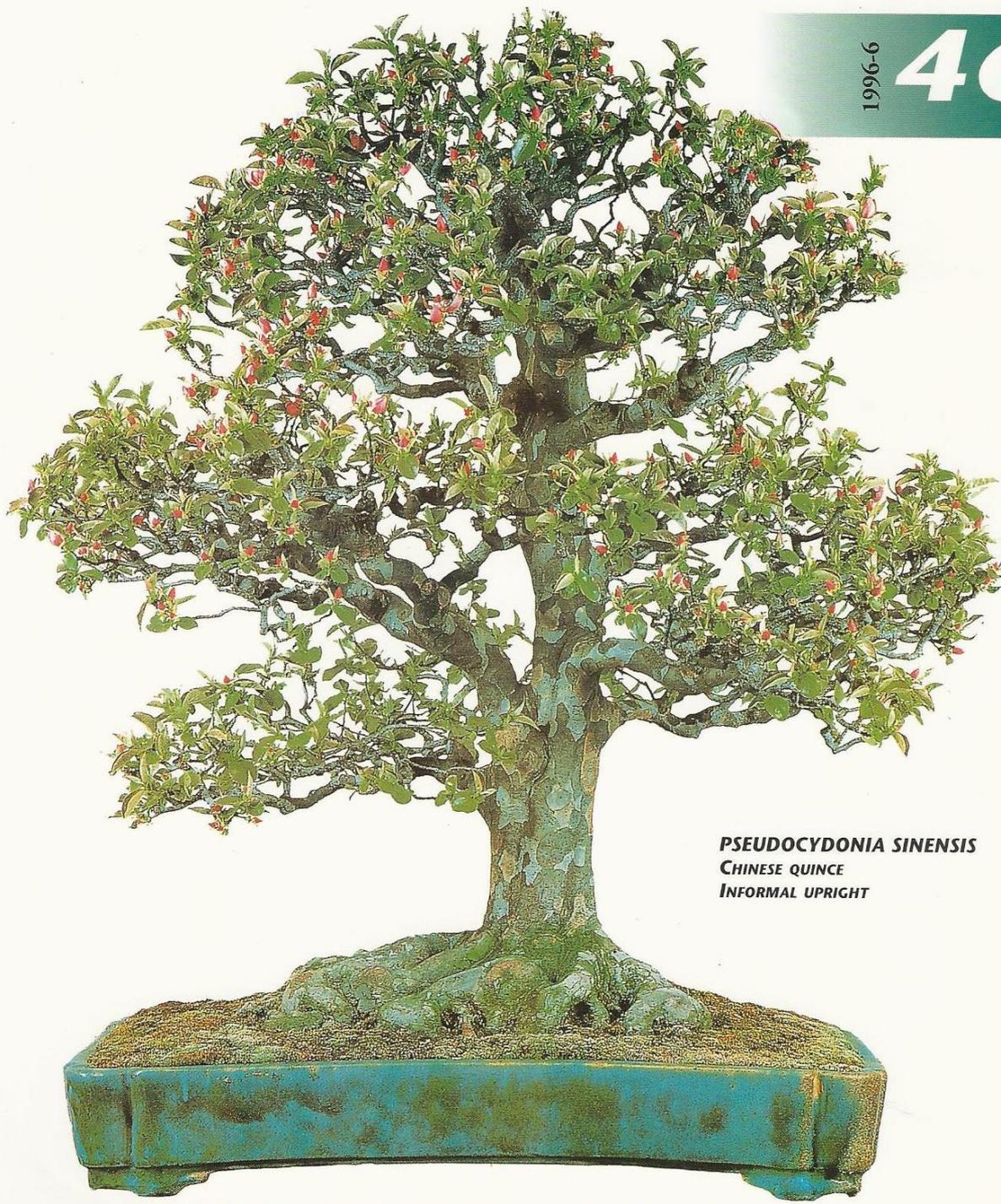
# Transplant Shock

The first year a tree sleeps,  
the second year it creeps,  
the third year it leaps.



# When Planting Should I... ?

- Prune – Only Diseased or Damaged Branches
- Remove Roots - Only Diseased, Damaged, Circling Roots
- Plant Root Flare at Grade- Definitely
- Wrap Trunk – Only Through First Winters remove in spring
- Amend the Soil – Usually Not.
- Fertilize – Usually Not
- Add Mycorrhizae – Usually Not
- Stake and Guy – Only When Necessary
- Use Landscape Fabric – Research Shows No
- Stomp Around Rootball To Settle Dirt – Definitely Not
- Dig Hole 3x Diameter of Root Ball - Always
- Remove Burlap, twine, and wire - Definitely
- Mulch – Definitely
- Water – Definitely



***PSEUDOCYDONIA SINENSIS***  
**CHINESE QUINCE**  
**INFORMAL UPRIGHT**

# Stop Tree Abuse

## Do Not Top !

- Biology does not allow trees the seal wounds
- Removing foliage reduces food production
- Root / Shoot Balance



# Every Pruning Cut is a Wound

- **Mammals Are Re-generating Organisms**
- **Trees Are Generating Organisms**





# Painting Wounds Does not Stop Decay

In fact it traps moisture  
which promotes decay

# REASONS FOR PRUNING

- **For Tree Health**
  - Remove Dead or Diseased Branches or roots
  - Improve tree structure
  - Eliminate competing branches
  - Enhance Vigor



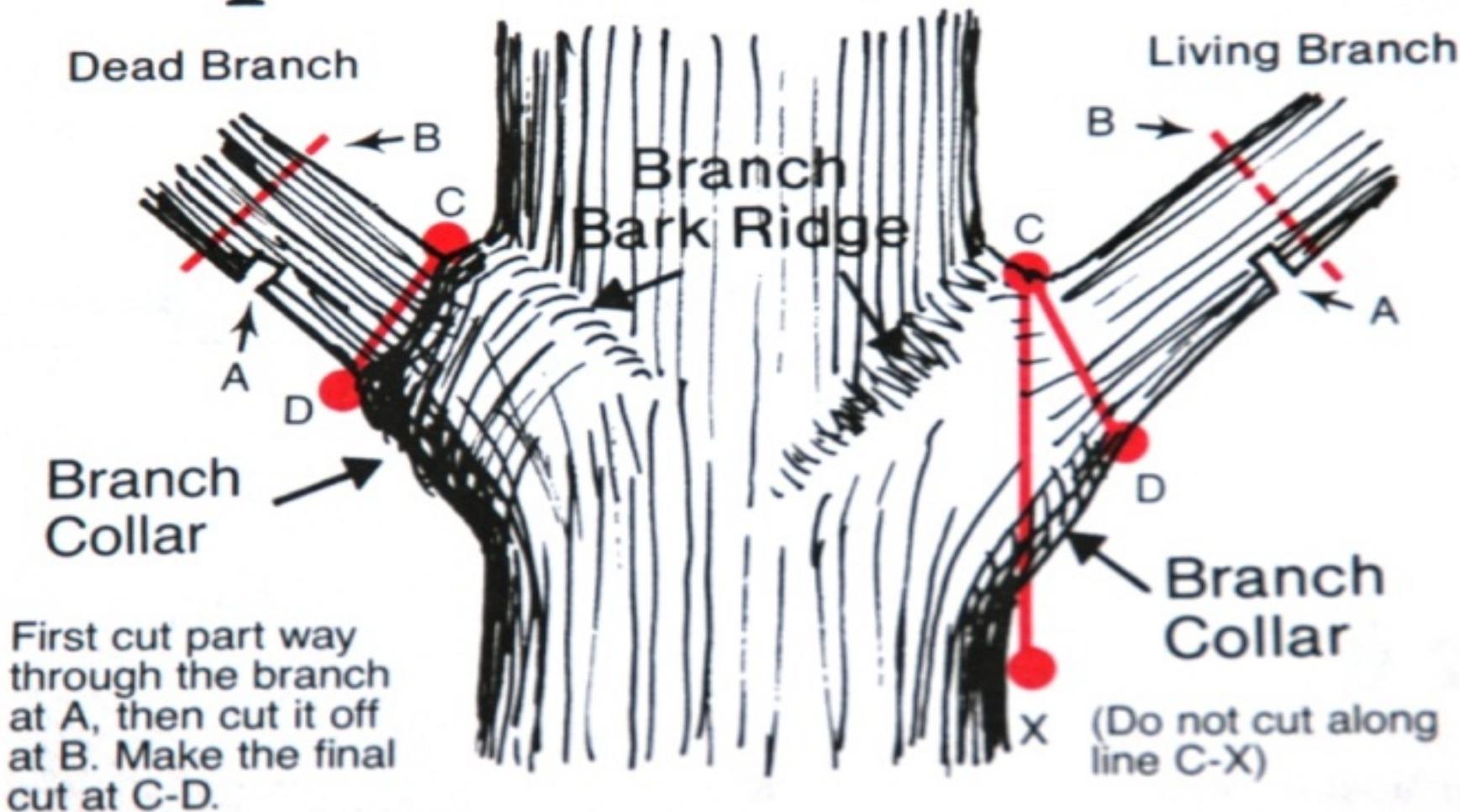
# REASONS FOR PRUNING

## People Reasons

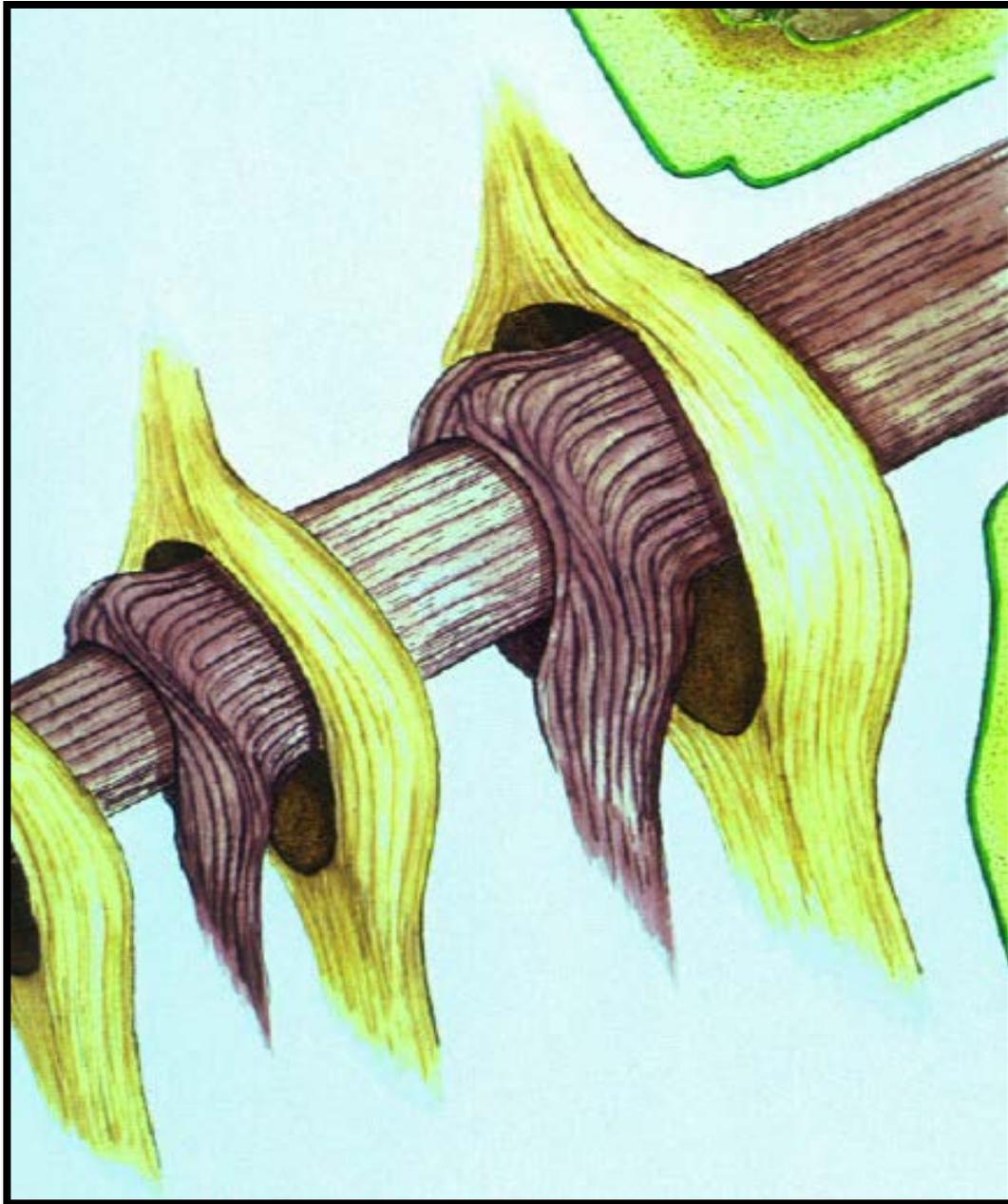
- Reduce potential for tree or branch failure
- Maintain safety
- Aesthetic preferences
- Providing clearance
- Reducing Shade or wind resistance
- Influencing flower or fruit growth
- Improving view



# Proper Pruning Principles



## Hardwoods



# Branch Bark Ridge and Branch Collar

Tree anatomy dictates  
placement of pruning  
cut

Target Pruning

# Target Pruning



**Trees can only compartmentalize damage when pruning cuts are in the Zone.**

- **Avoid flush cuts**
- **Avoid stub cuts**
- **Prune when trunk is 2x branch diameter**



# Target Pruning

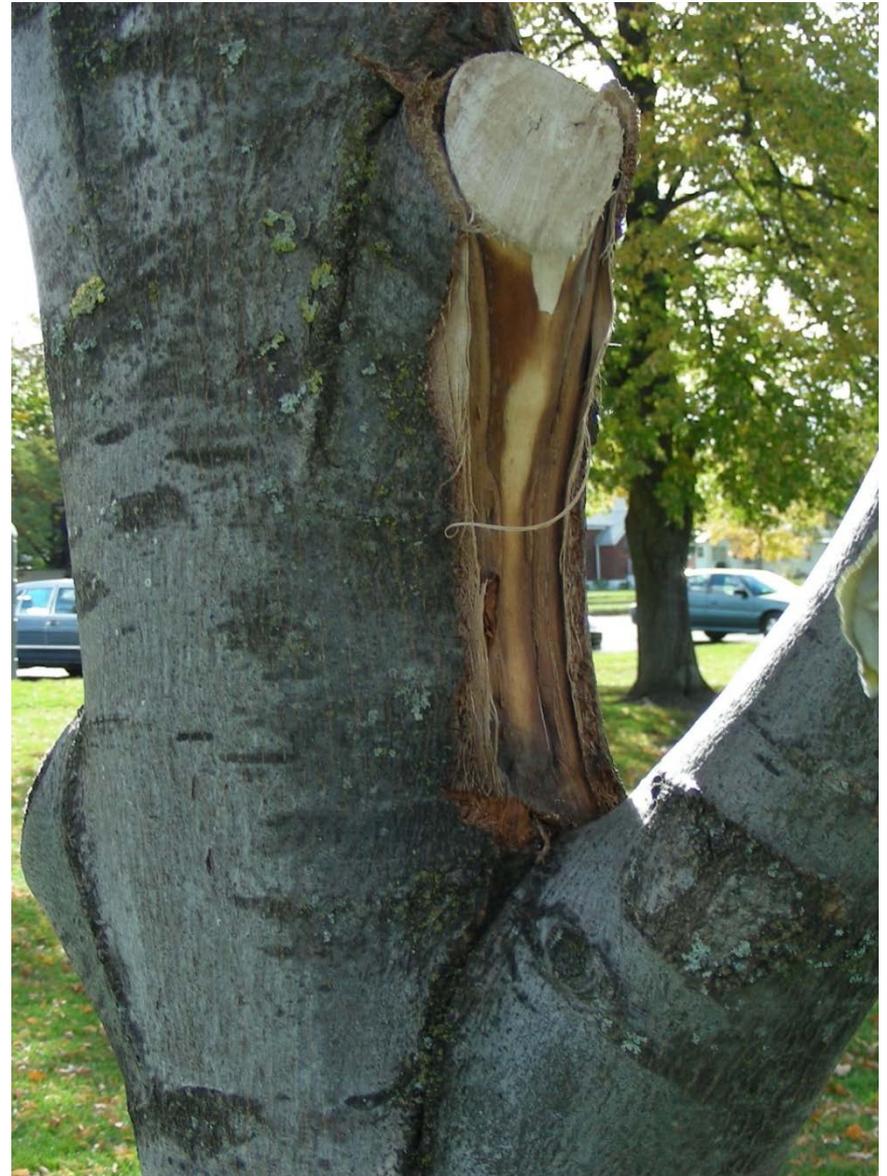
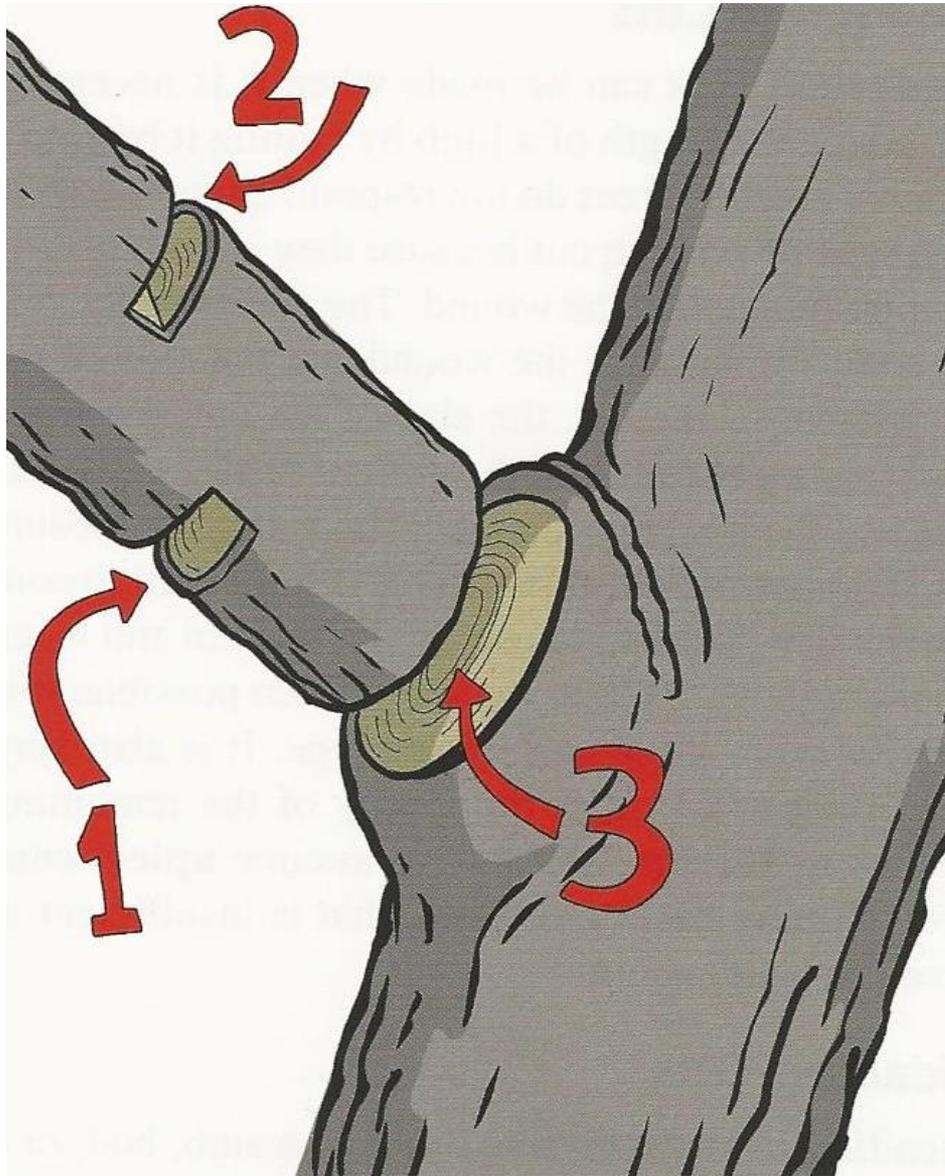


# Stub Cut





# Three Cut Method





Damaged by improper  
Pruning

- Flush cut
- Stub cut





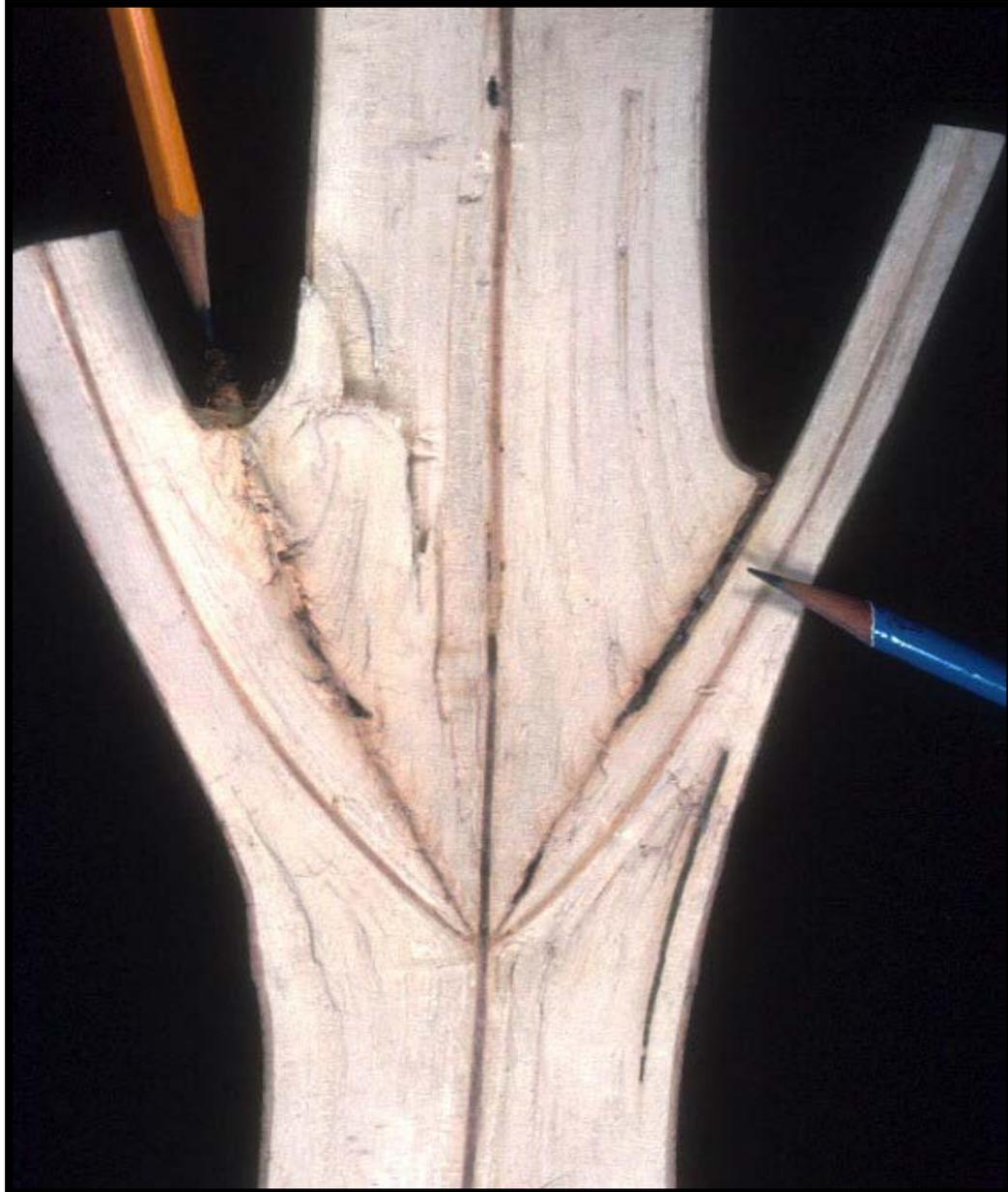
**Co - Dominant Leaders  
a cause of failures**





# High angles of attachment





**Strong Branch  
Union**

**Weak Union with  
Included Bark**

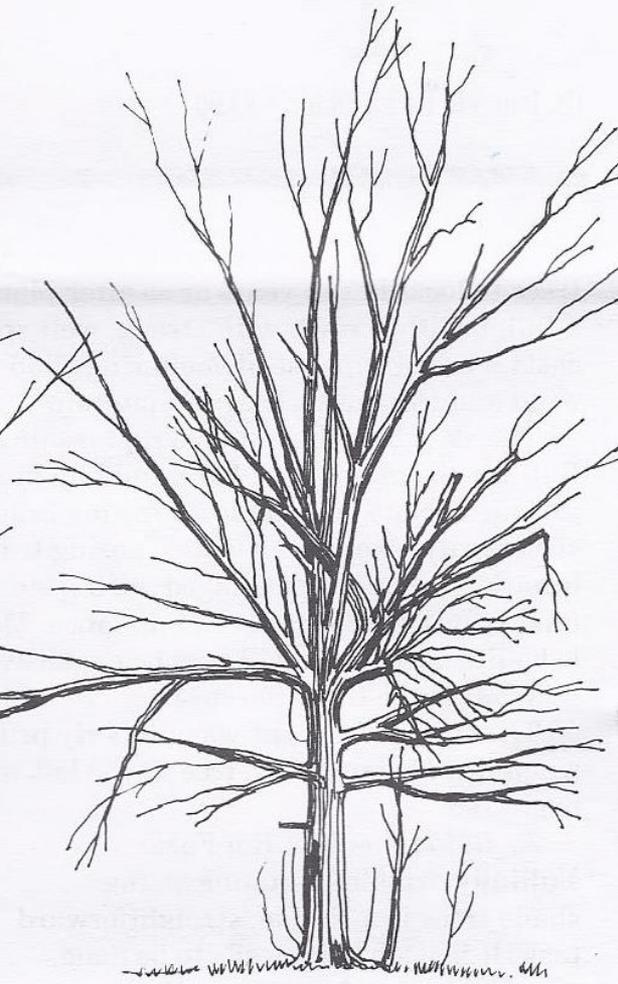
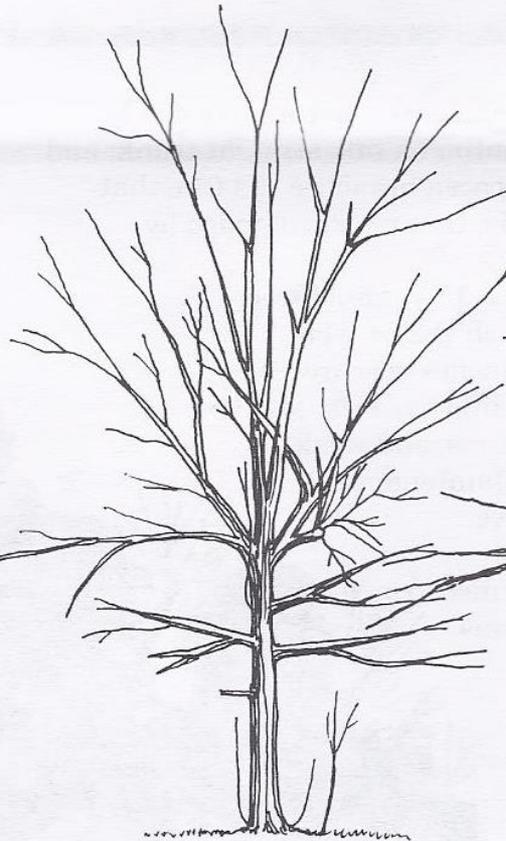
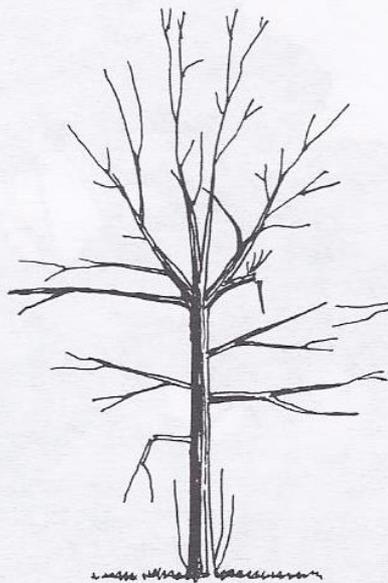
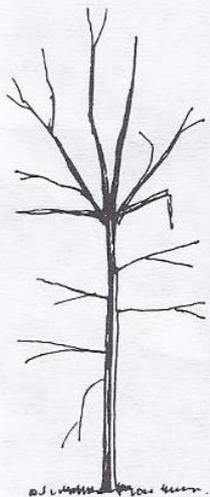
Dr. Alex Shigo

# Included Bark Causes Failure





# FAMILY A's TREE — Not Pruned When Young



**At Planting**

Family A didn't ask

**After 3-4 Years**

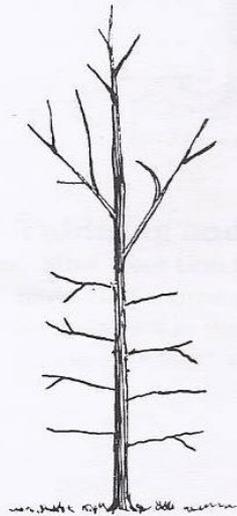
By the time many trans-

**After 5-7 Years**

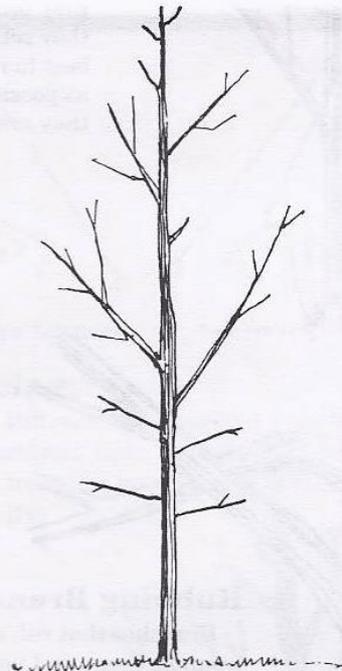
The baby is quickly becom-

**15 Years After  
Planting**

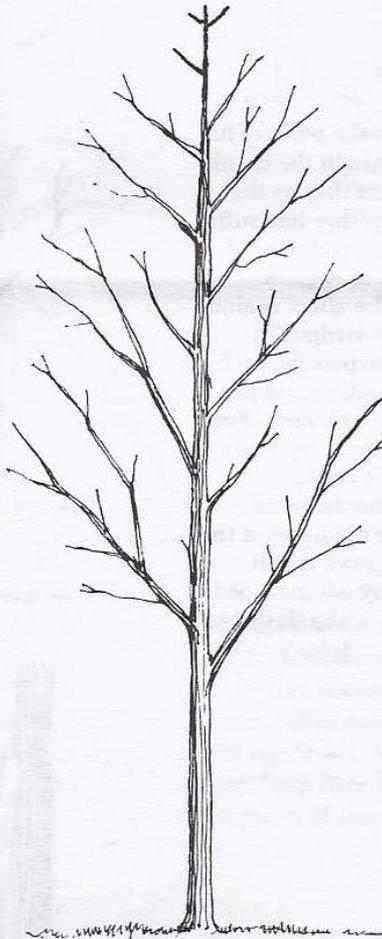
## FAMILY B's TREE — Pruned When Young



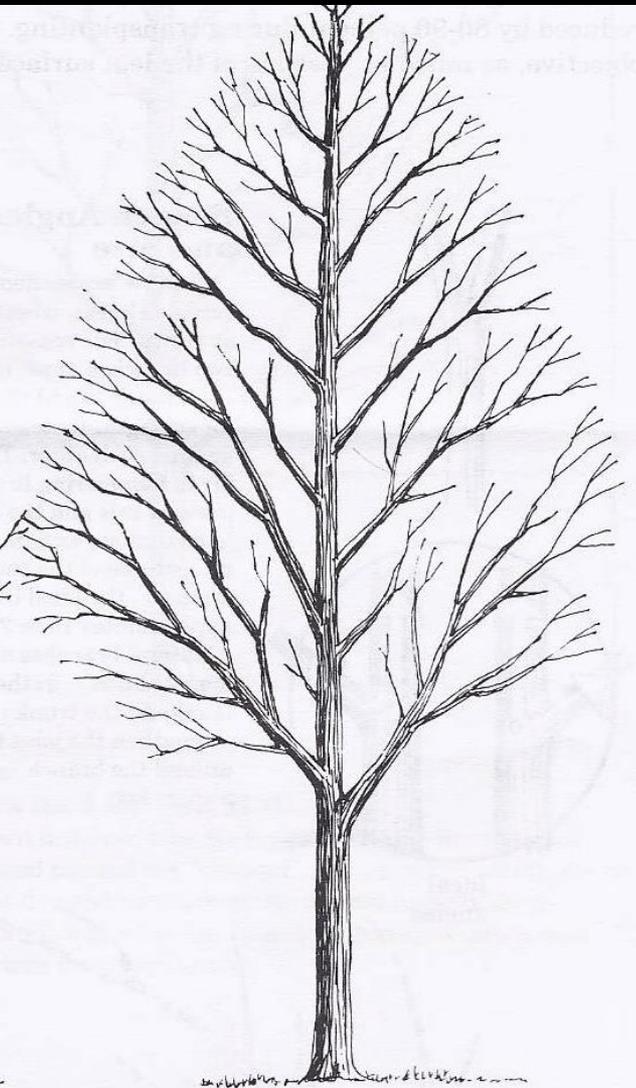
**At Planting**  
Family B also



**After 3-4 Years**  
By now root growth should



**After 5-7 Years**  
Now is the time to make a



**15 Years After  
Planting**



## Training Young Trees

- Reduces Future Problems
- Controls Costs



## Subordinating Competing Leaders

- Improves Structure
- Reduces chance for future failure
- Restores Apical Dominance



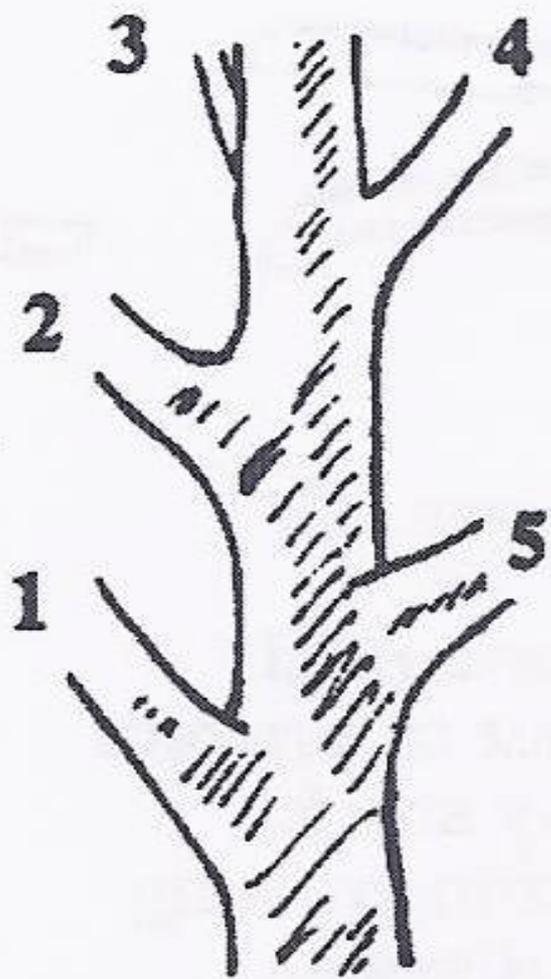
*Ginkgo biloba* "Princeton Sentry"



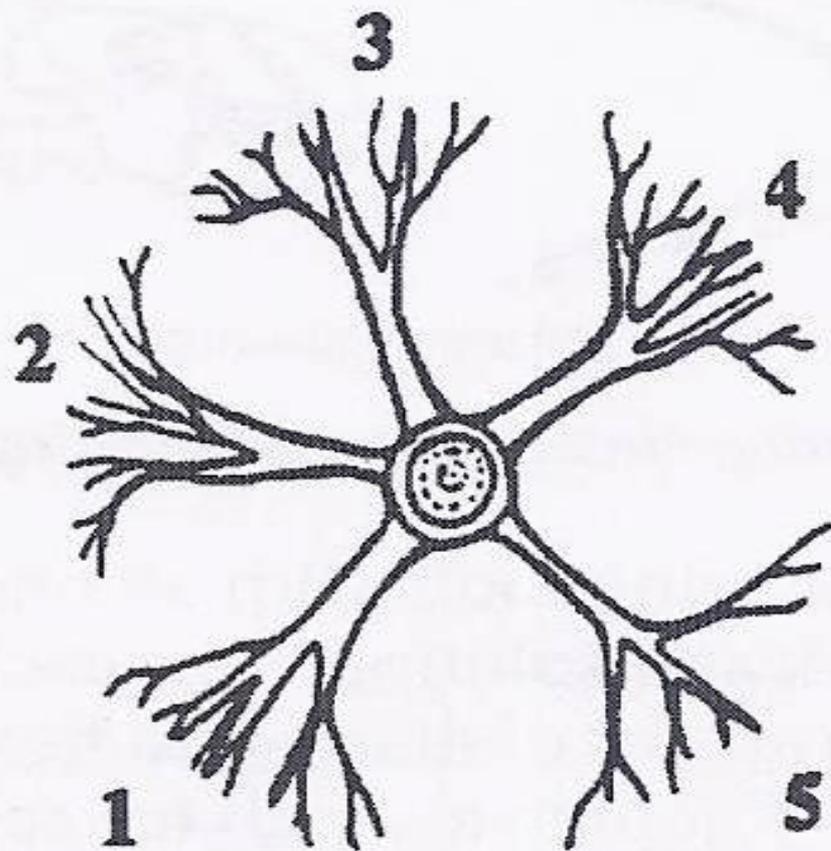
*Pryus calleryana* "Chanticleer"







(a) Vertical spacing



(b) Radial spacing

*Figure 1.—Proper vertical spacing (a) and radial spacing (b) for scaffold branches.*

**Select a strong leader**

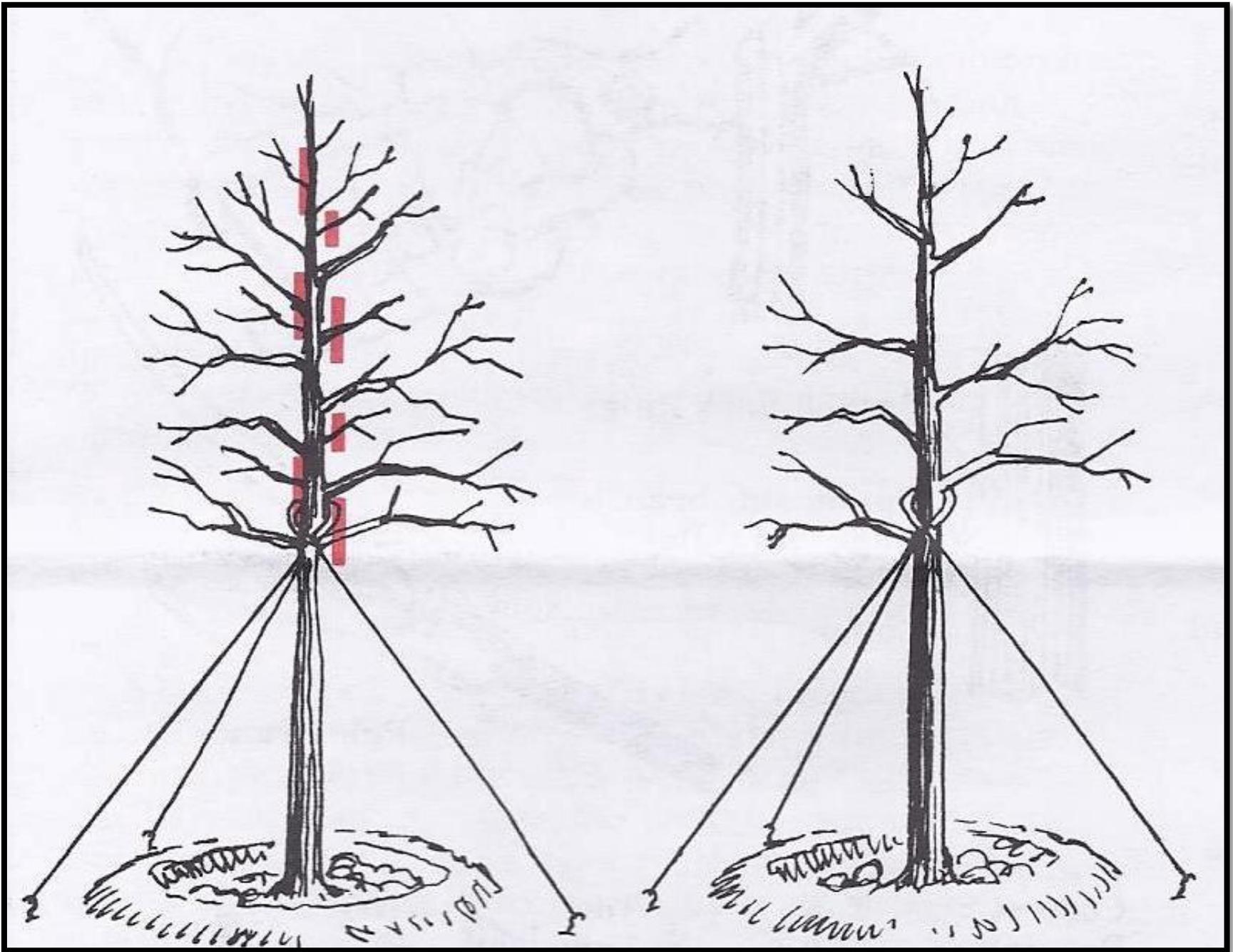
**Sub-ordinate competing leader**

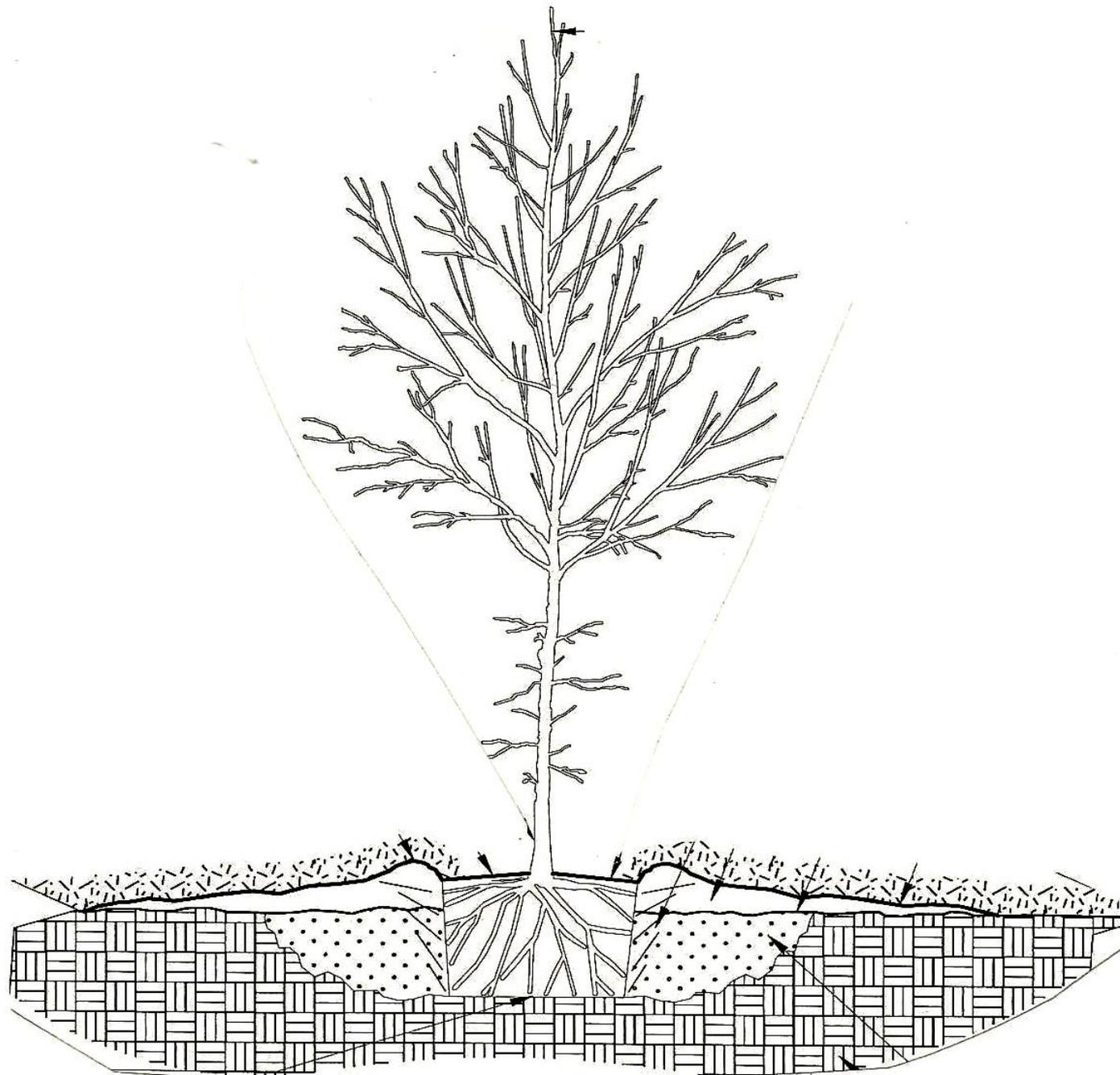
**Select Permanent Branches**

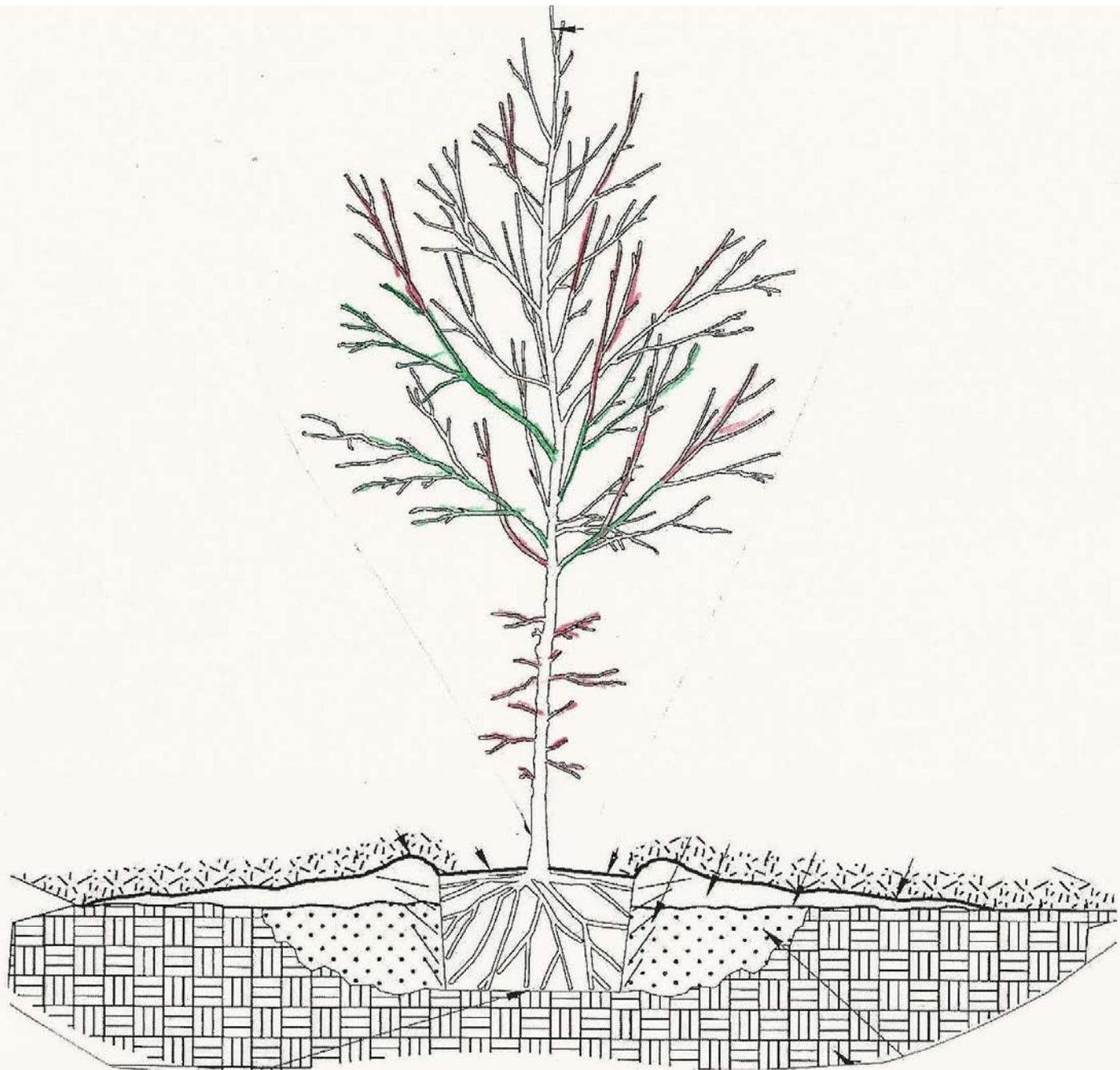


# Timely Remedial Pruning prevents Potential Problems









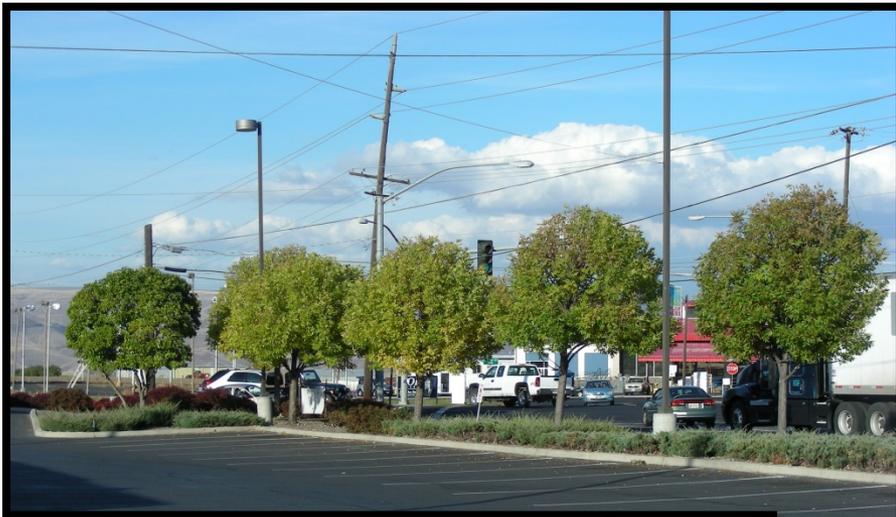
# Topping is always a bad idea



# Root to Shoot Balance

Pruning Response is Growth





**Topping cannot  
control height  
must be repeated**

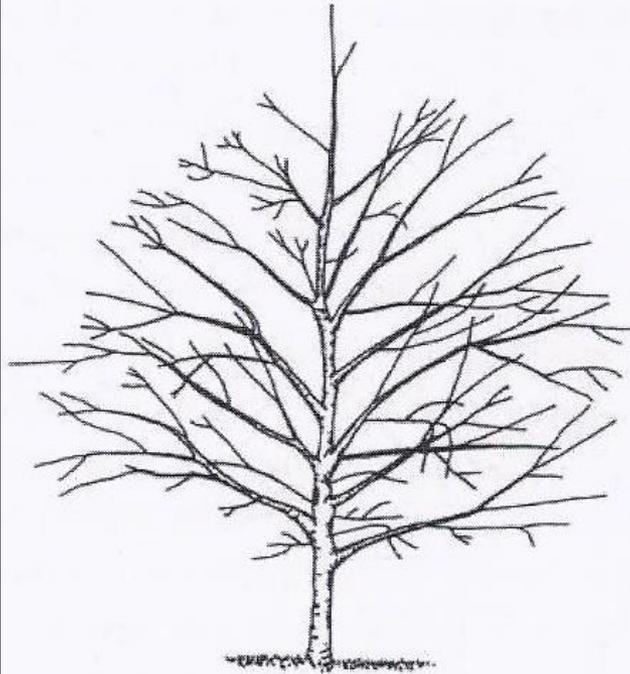


# Pollarding

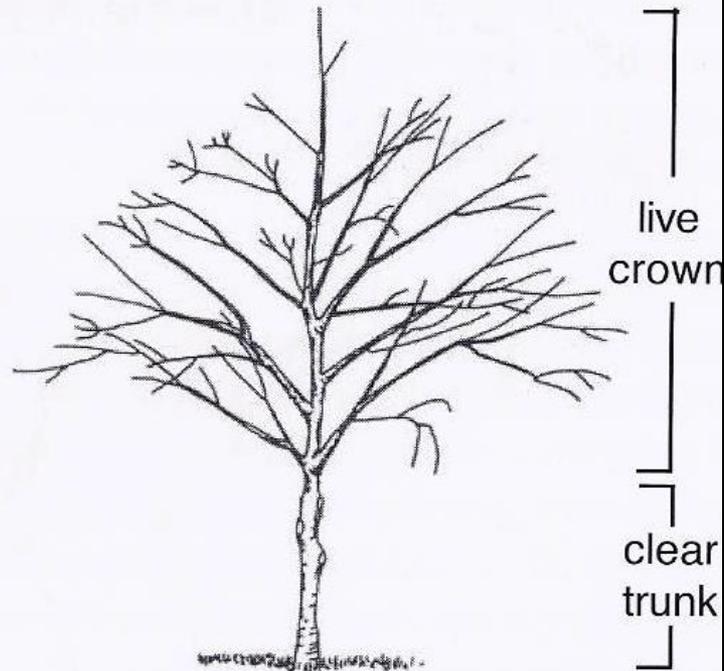


# Canopy Raising

Before raising



After raising



**Problem:** Many trees develop large low branches when planted in the open. As a result they develop a low spreading crown. Low branches often block visibility of signs, buildings and vehicles and have to be removed.

**Solution:** Remove low branches back to the trunk using an appropriate pruning cut. The ratio of live crown to clear trunk (live crown ratio) should be no less than 50 percent.

# Select permanent branches when trees are young

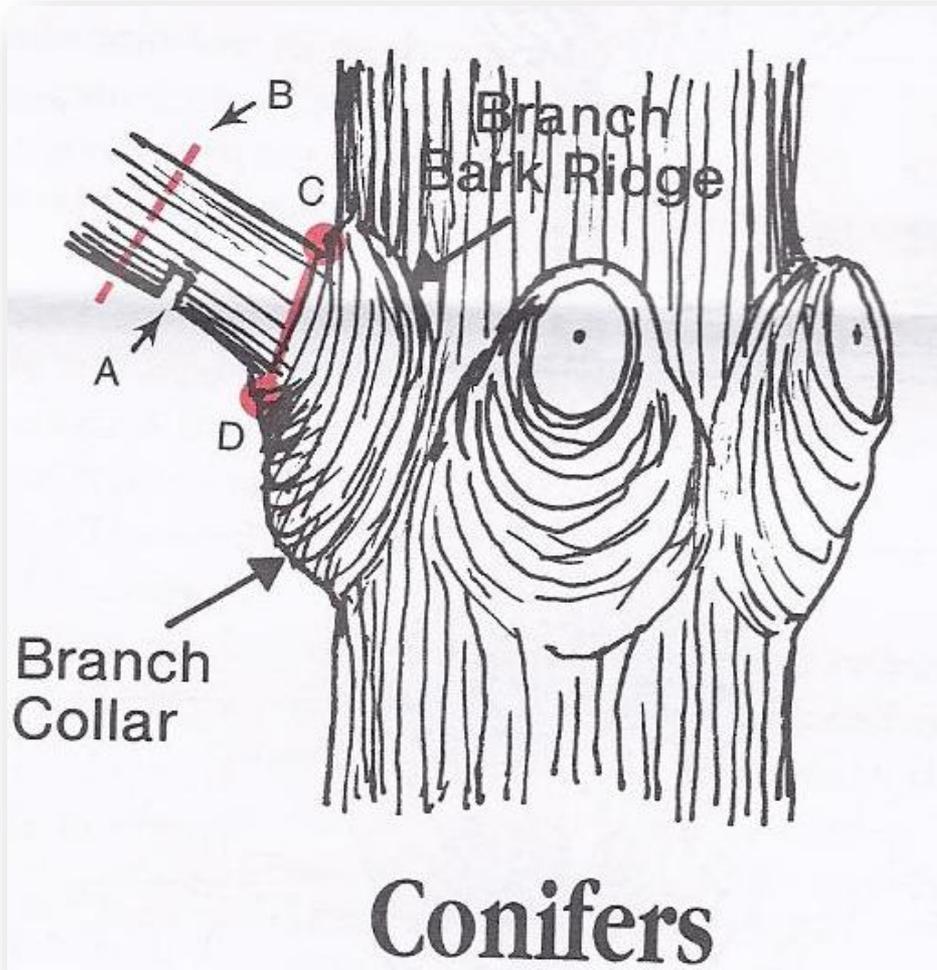


# Lion's Tailing



Dr. Ed Gilman UF, photo

# Pruning Conifers





# Pruning Conifers





# Espalier



# Disinfecting Methods

Dip blades 2 or 3 minutes in disinfectant

Spray blades

70% alcohol – denatured, or rubbing

Diluted bleach - 1part bleach to 9 parts  
water

Lysol or Pine Sol 1 part to 4 parts of water

Commercial products available





Questions ?