



# **Pruning for Healthy Trees: It all begins before the first cut!**

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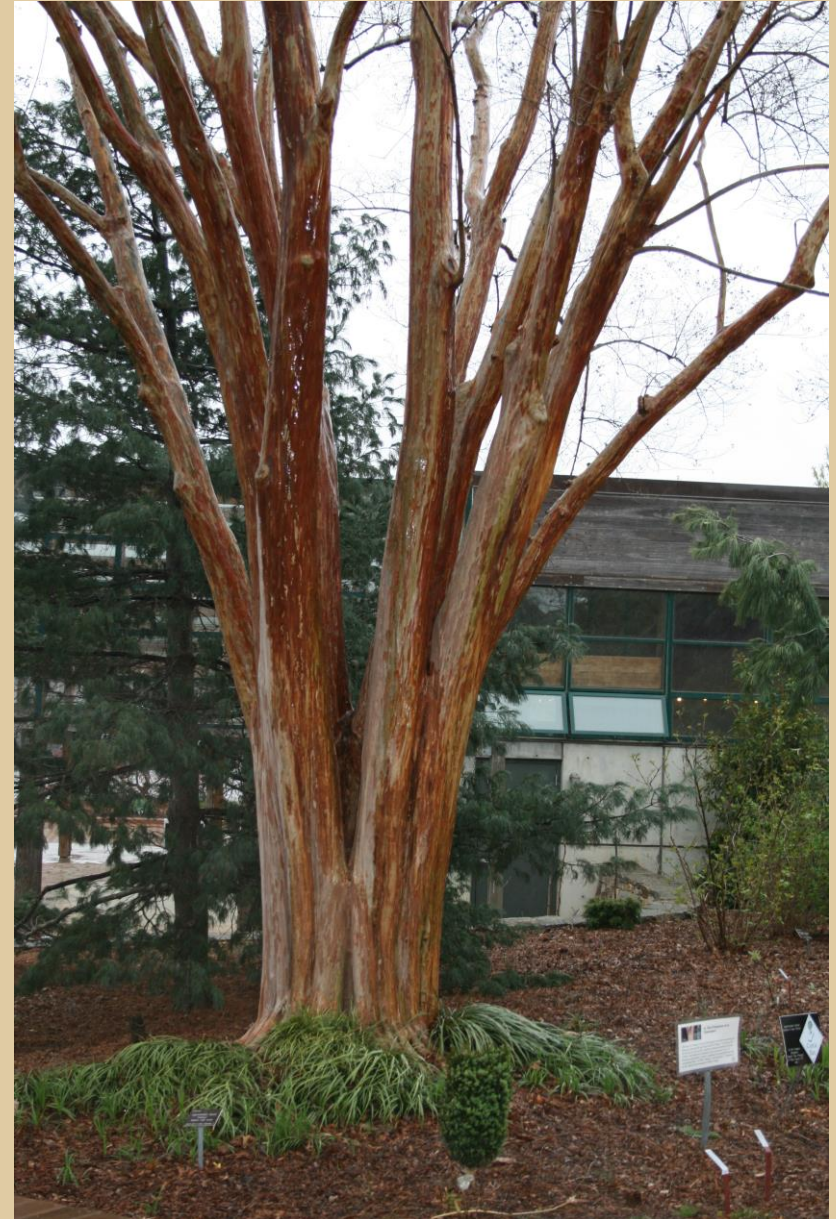


# True or False

- Pruning is Based on Science.
  - Pruning is Fun.
  - Pruning is Straightforward.
  - Pruning is Easy.
  - Bad Pruning Kills Plants.
- True
  - Absolutely true!!!
  - True and False
  - It depends.
  - False

# Today's Objectives

- The right plant and the site
- The why of pruning
- Little plant bio
- Wrap up...



# How does good pruning fit with this healthy tree stuff???

- Pick the right plant
  - Consider mature size
  - Consider adaptability
  - Consider growth rate
- Prepare a good site
  - Soil, soil, soil
  - Space limitations
  - How much you got in your pocket?



SPEED  
LIMIT  
45











*Healthy trees may need less pruning...  
Quercus phellos, willow oak*



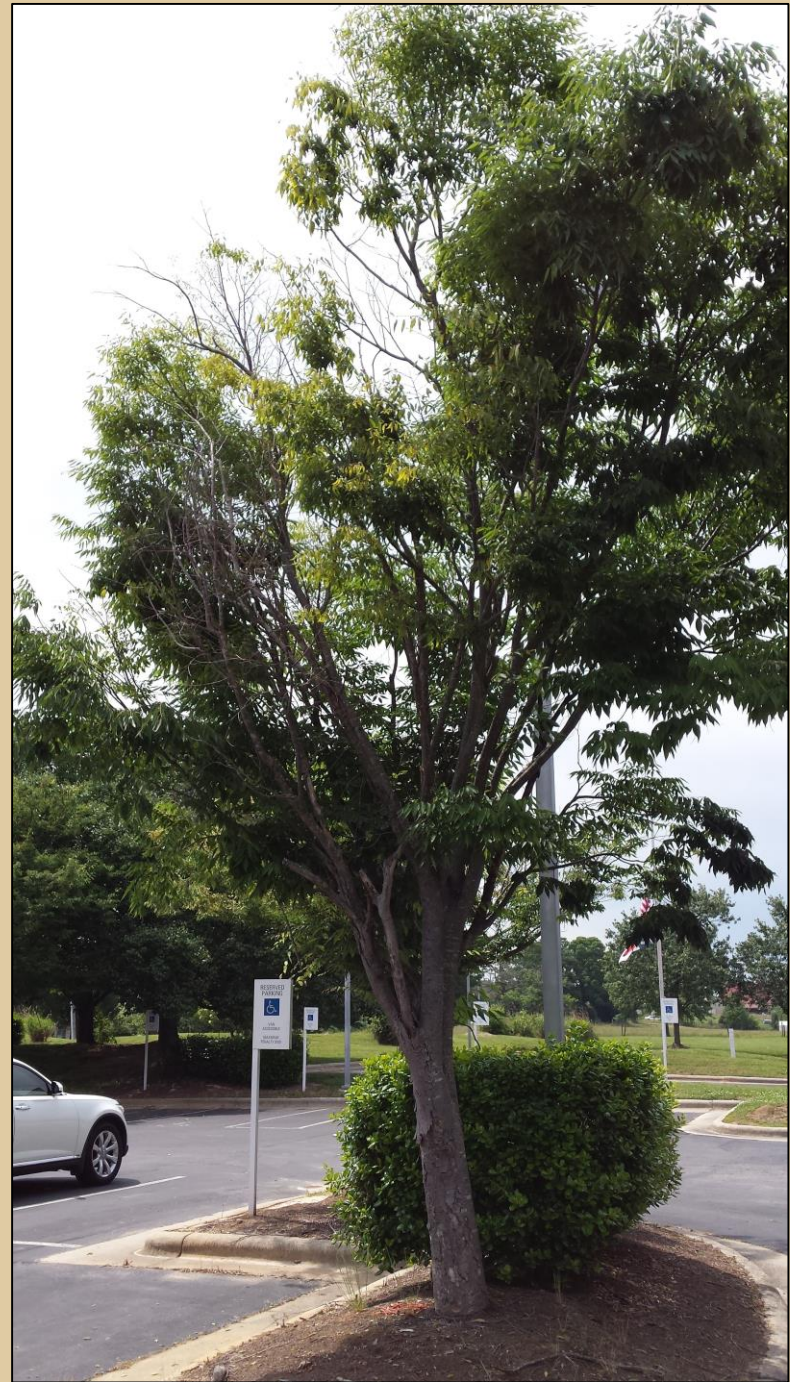
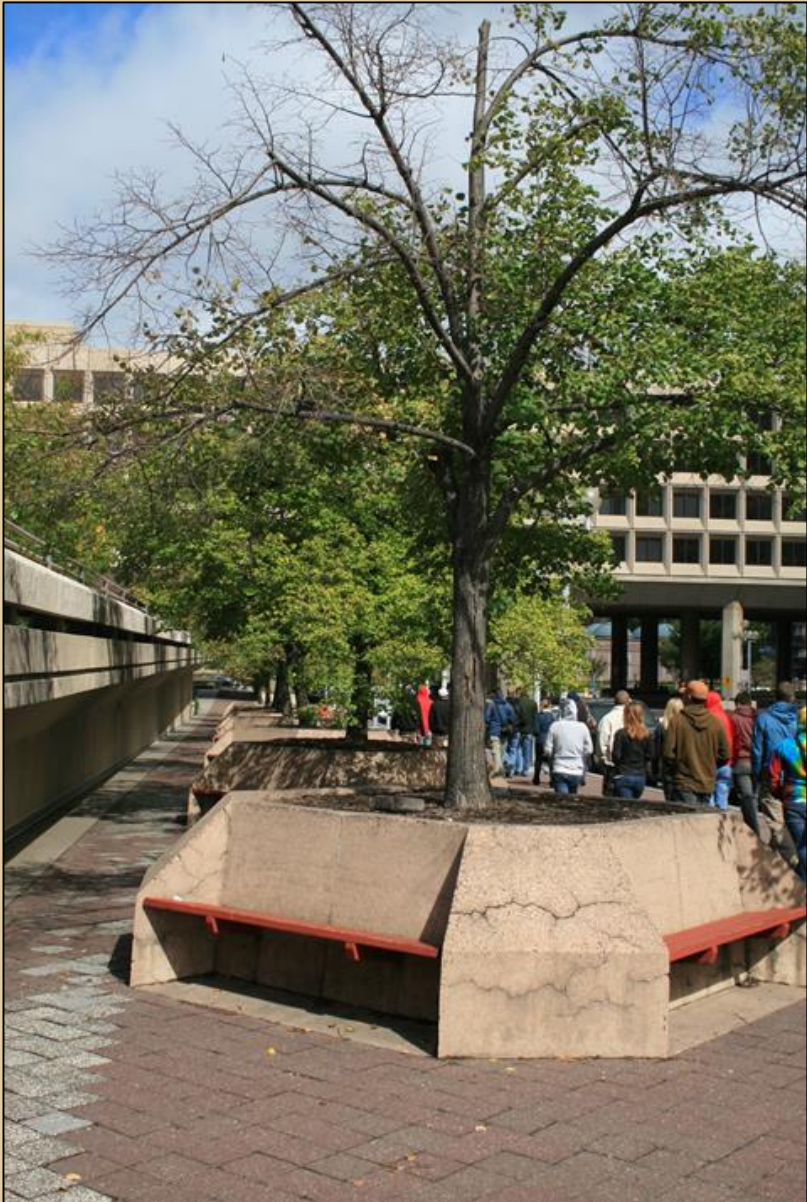
# Site Limitations

- Check out vertical and horizontal space limitations
- Traffic, signs other safety issues and obstacles





I just need a little  
space...



# Look for Quality Nursery Stock



# Evaluate Plant Prior to First Cut



- Why are you pruning this plant?
- Can the plant tolerate pruning?
- How will the plant respond to pruning?
- What is its function in landscape?



# The Why of pruning trees...

- To create and maintain a strong structure
  - **Start when plant is young!**
  - Prune to get good branch spacing at maturity
    - Thinning
- Prune to maintain health
  - Remove dead, broken, split or diseased branches
- Prune for flower and fruit
- Prune to direct growth or control size (mostly shrubs)
  - Heading back (shearing)
  - Crown reduction
  - Rejuvenation
  - Thinning



## 2 Key Rules

- 1) Woody plants DO NOT HEAL
  - Healing = tissue repair and replacement
  - Maintain all cells, do not repair
  - Defend with chemicals and physical barriers (walls)
    - ✓ Contains decay and pests
- 2) Pruning is done by us, for us
  - For safety and aesthetics
  - We grow trees in sites foreign to them



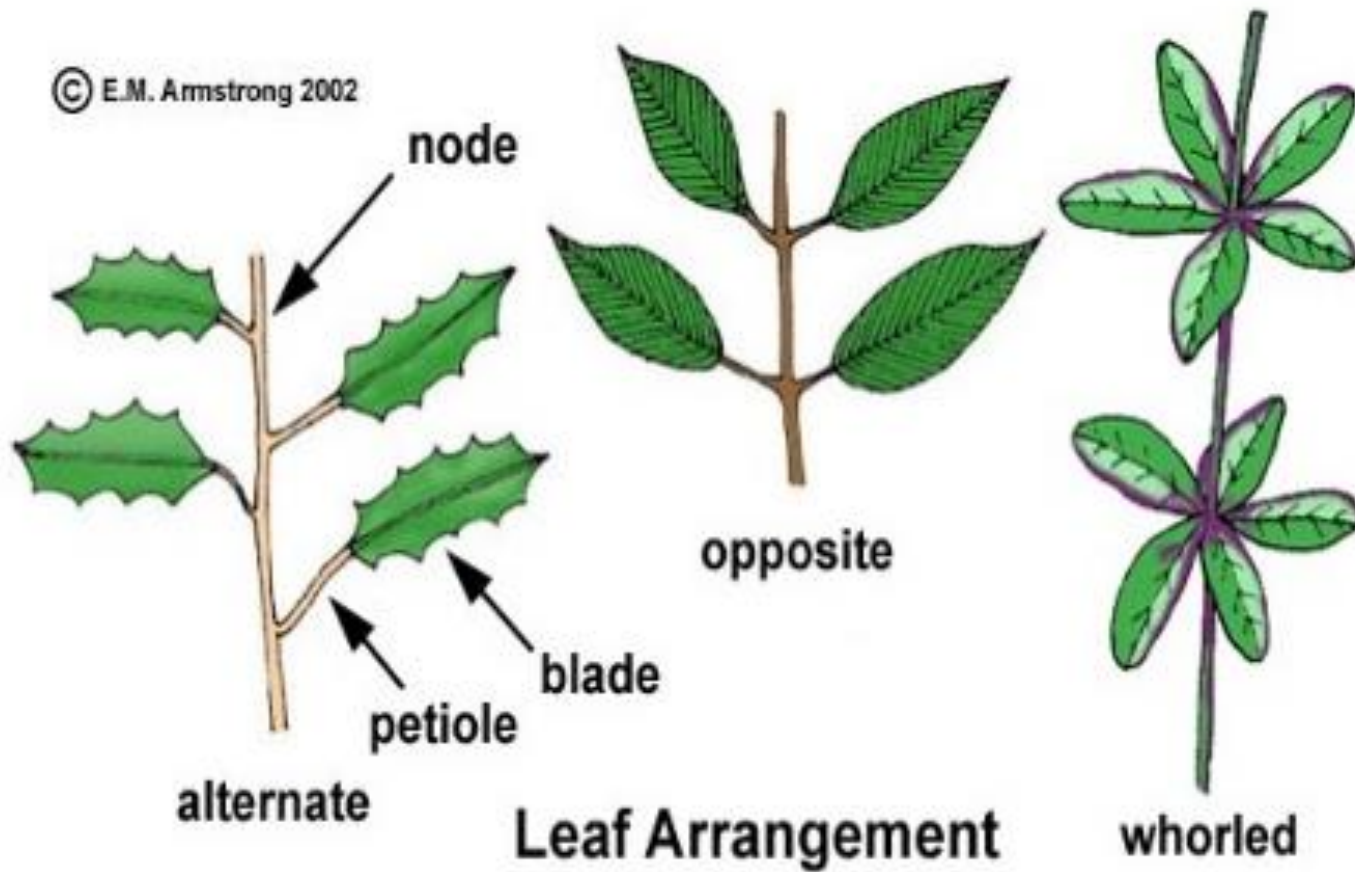
# Tree Biology 101



**terminal (apical) buds**

**lateral (axillary) buds**

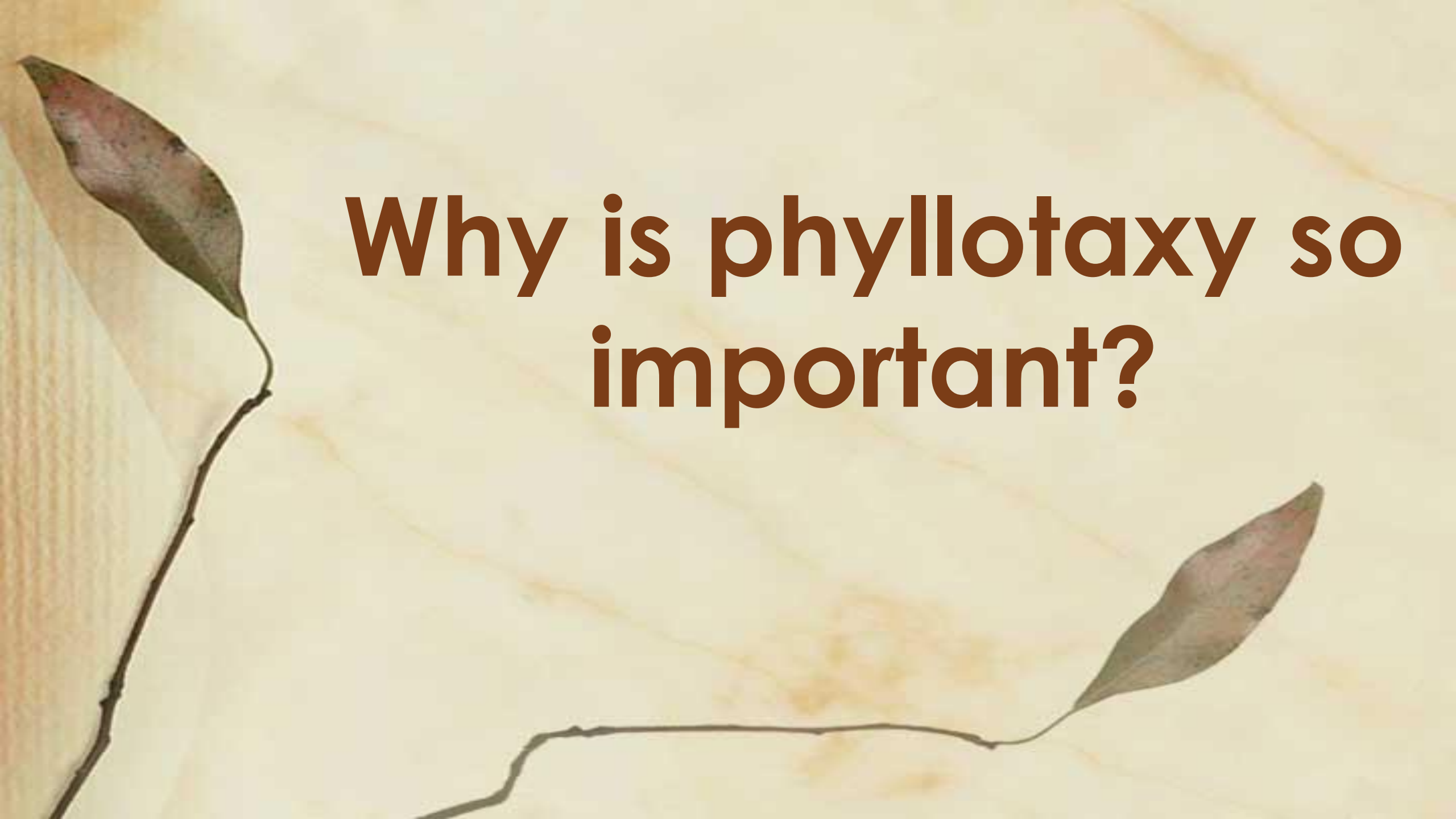
# Phyllotaxy- leaf/bud/branch arrangement





# Sub-opposite



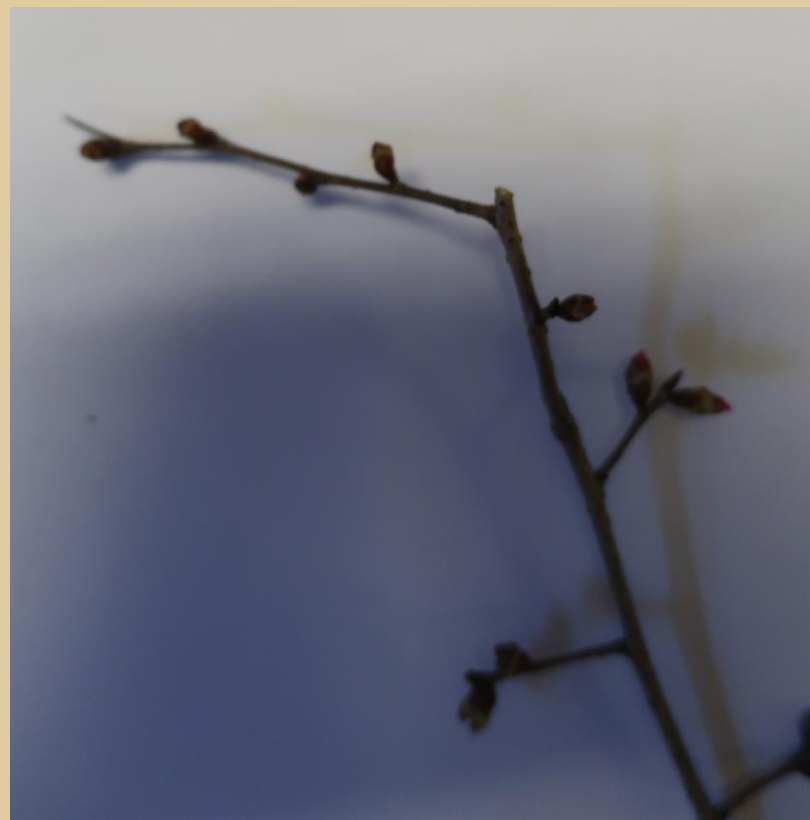
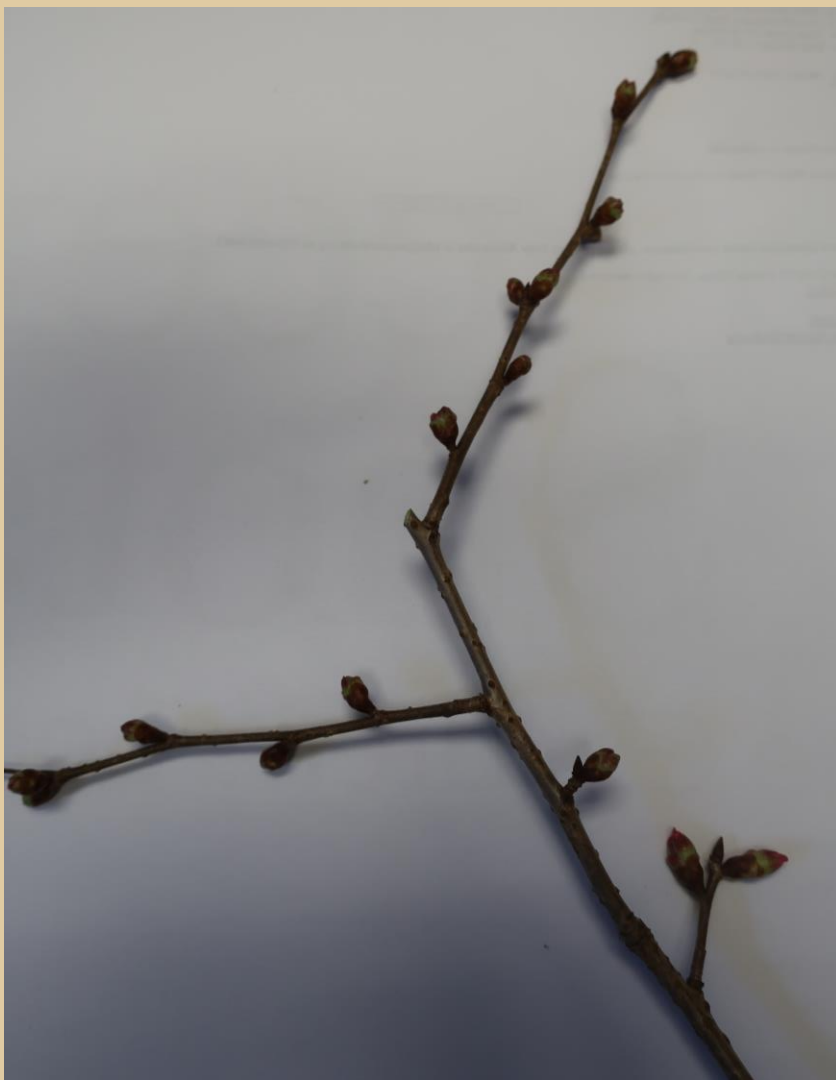
The image shows a botanical specimen of a branch with two leaves. The branch is dark brown and runs horizontally across the lower half of the frame. On the left side, a leaf is attached to the branch, showing a dark brown, almost black, stem and a light brown, almost white, leaf blade. On the right side, another leaf is attached to the branch, showing a dark brown stem and a light brown, almost white, leaf blade. The background is a light-colored, textured surface, possibly a piece of paper or fabric, with some faint, irregular brown spots. The text "Why is phyllotaxy so important?" is written in a bold, brown font, centered in the upper half of the image.

**Why is phyllotaxy so important?**

**It has everything to do with how you prune!**





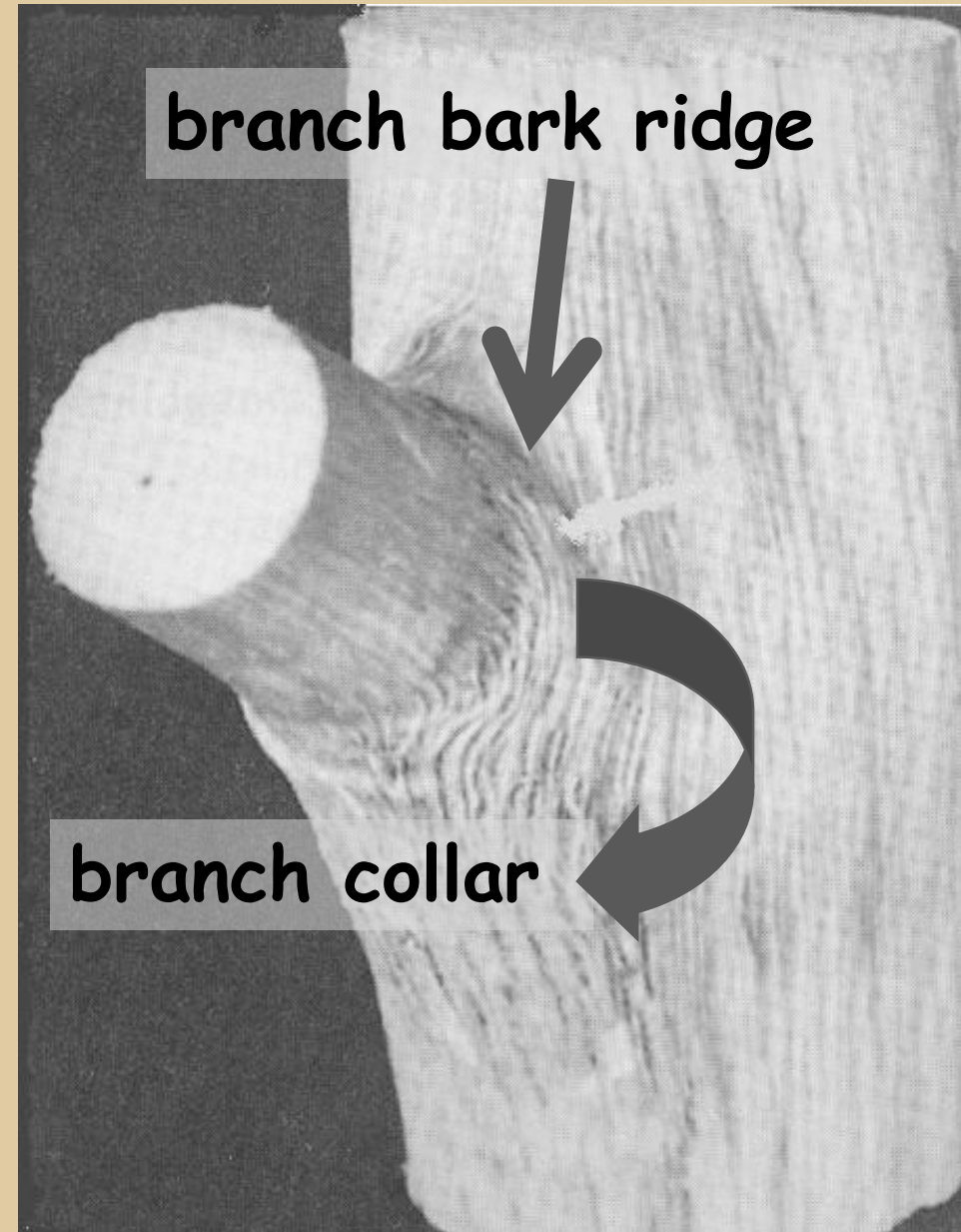






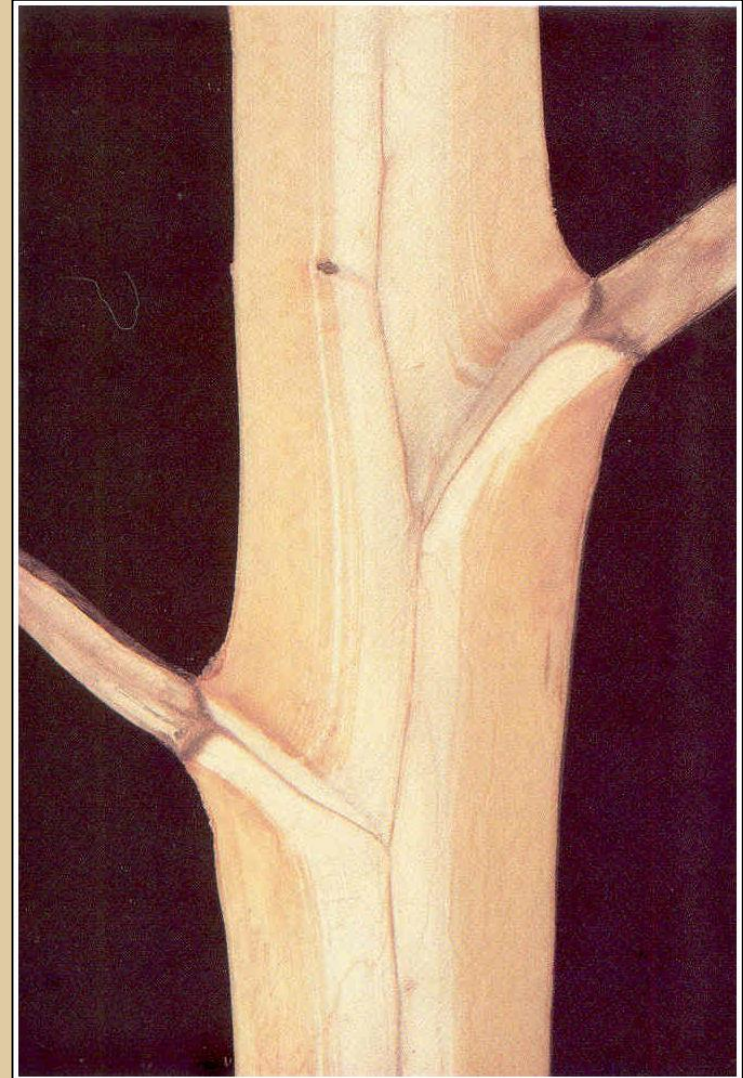
# Branches

- Similar in structure & function to trunk
- Unique attachments
  - Stronger below; weaker above
- Branch collar
  - Union of branch and trunk
  - Key to proper pruning
- Branch bark ridge
  - In crotch, branch and trunk expand against each other



# Branch Protection Zone

- Chemical zone
- Must maintain during pruning





# What do you remove?

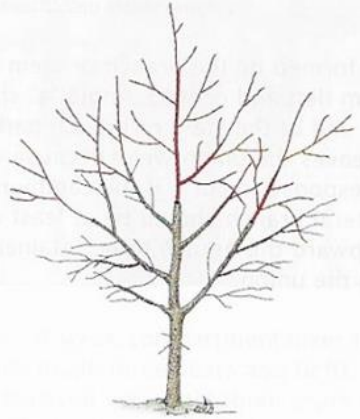
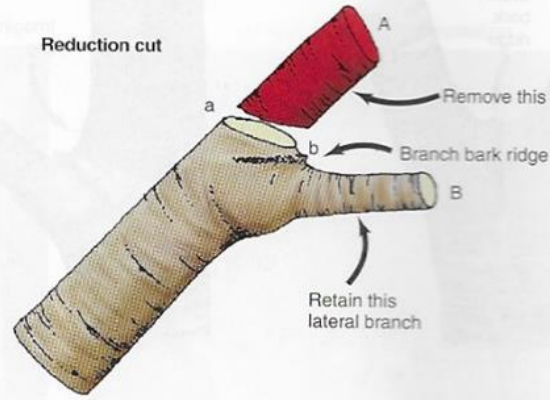
- Dead limbs- DUH!
- Co-dominate branches
- Crossing branches
- Inward growing branches
  - Don't get too crazy here!
- Broken, dead or diseased branches
- Suckers
- Directional control
  - Which way do you want the branches to grow?



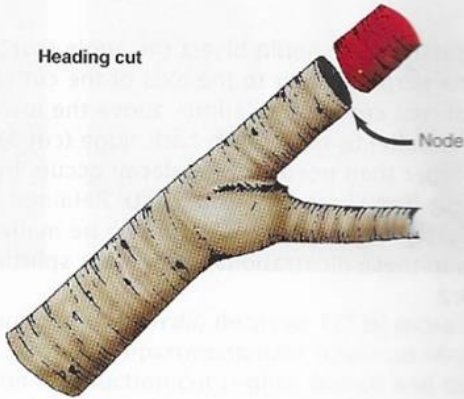
## Types of pruning cuts



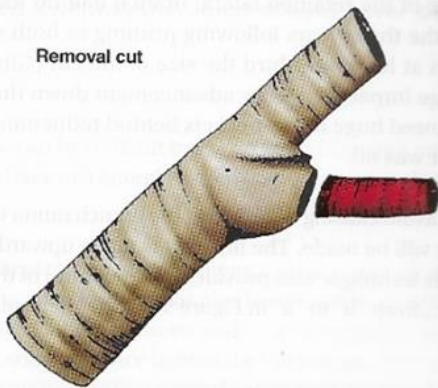
Reduction cut



Heading cut



Removal cut



# Types of Pruning Cuts

- Reduction cut- reduces length of branch or stem back to a live lateral branch of sufficient size
- Heading cut- reduces length of branch or stem without regard to position or diameter of nearby lateral branches
- Removal cut (collar cut)- removes branch from trunk or parent branch just at collar

# Comparison of Response to Various Pruning Cuts

| Cut type  | Invigorates existing interior foliage | Induces sprouting | Crown density reduced? | Crown height reduced? | Crown width reduced? | Cut back to natural boundary |
|-----------|---------------------------------------|-------------------|------------------------|-----------------------|----------------------|------------------------------|
| Reduction | Yes                                   | Usually           | Yes                    | Yes                   | Typically            | Somewhat                     |
| Removal   | Yes                                   | May               | Yes                    | Not typically         | Slightly             | Yes                          |
| Heading   | Yes                                   | Yes               | Yes, then gets bigger  | Yes                   | Typically            | No                           |

# Removal cuts

- Cuts made at collar
- Where to make the cut?
  - BBR- branch bark ridge
  - BC- branch collar



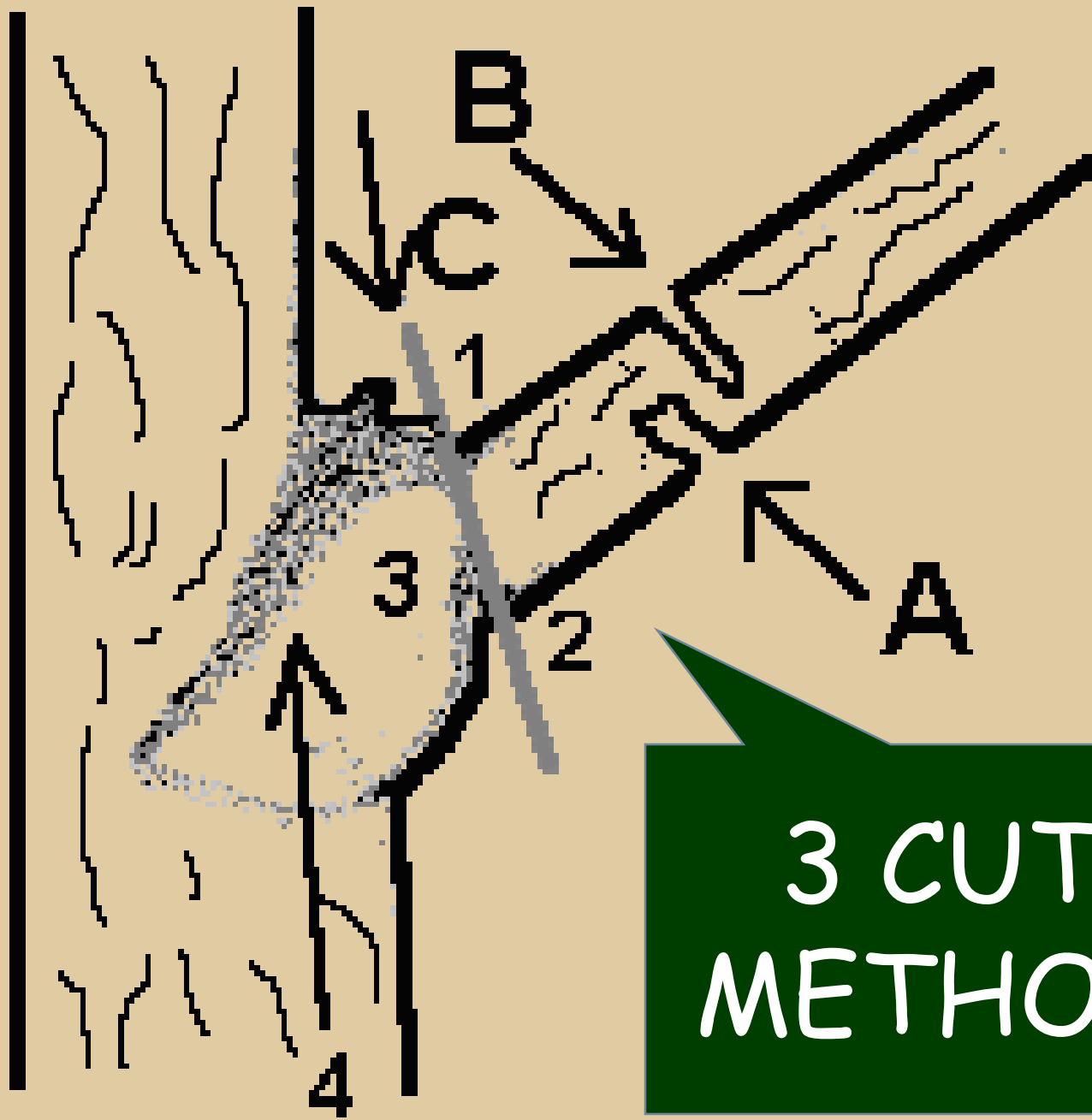




# “Natural Target Pruning” - for woody plants

- Thinning cuts made at collar
- What are the targets?
  - BBR- branch bark ridge
  - BC- branch collar





3 CUT  
METHOD







# Branch collar cut = thinning cut



45° angle from  
branch bark  
ridge to collar



← Good cuts...

Almost...



# The how and where...









# Topping = INCORRECT Heading Cut!









**Seriously? Still?**





**Correct!**



# Proper heading cut = Pollarding







# Start pruning when trees are young!



# Pruning Strategy for Trees

- Should match stage of life
- Maximum amount of foliage = maximum growth rate



# Young Shade Trees (in landscape)

- Develop one dominant trunk
- Remove/shorten (subordinate) aggressive branches
- Begin development of spacing
- Eliminate touching branches
- Pruning dose 50%





- Maintain some lower limbs, initially to build taper
- Subordinate aggressive limbs





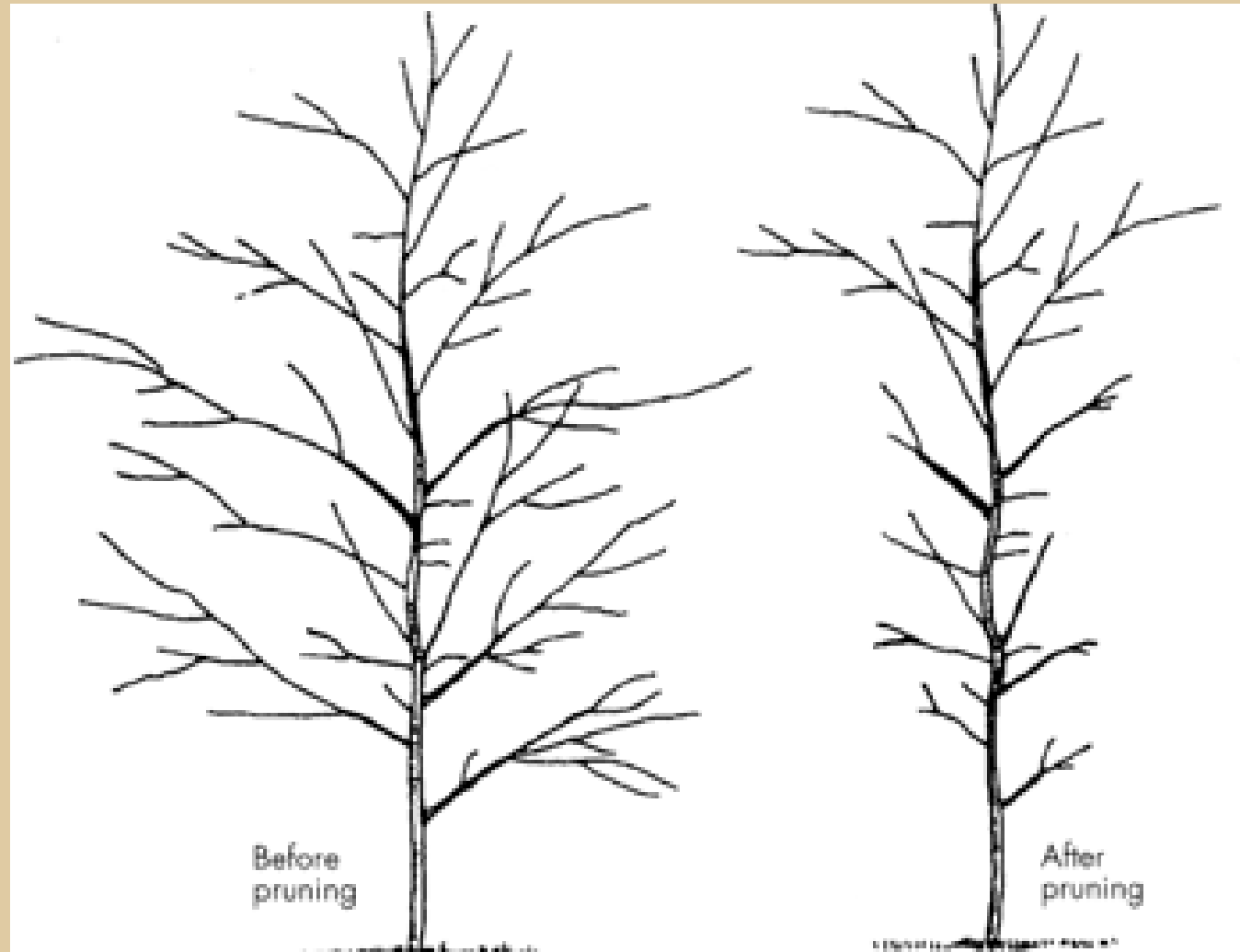
# Medium-aged Trees



- Continue to maintain one dominant trunk
- Shorten branches below lowest permanent limb
- Shorten aggressive branches
- Prevent lower branches growing up into permanent crown



# “Subordinate” aggressive branches

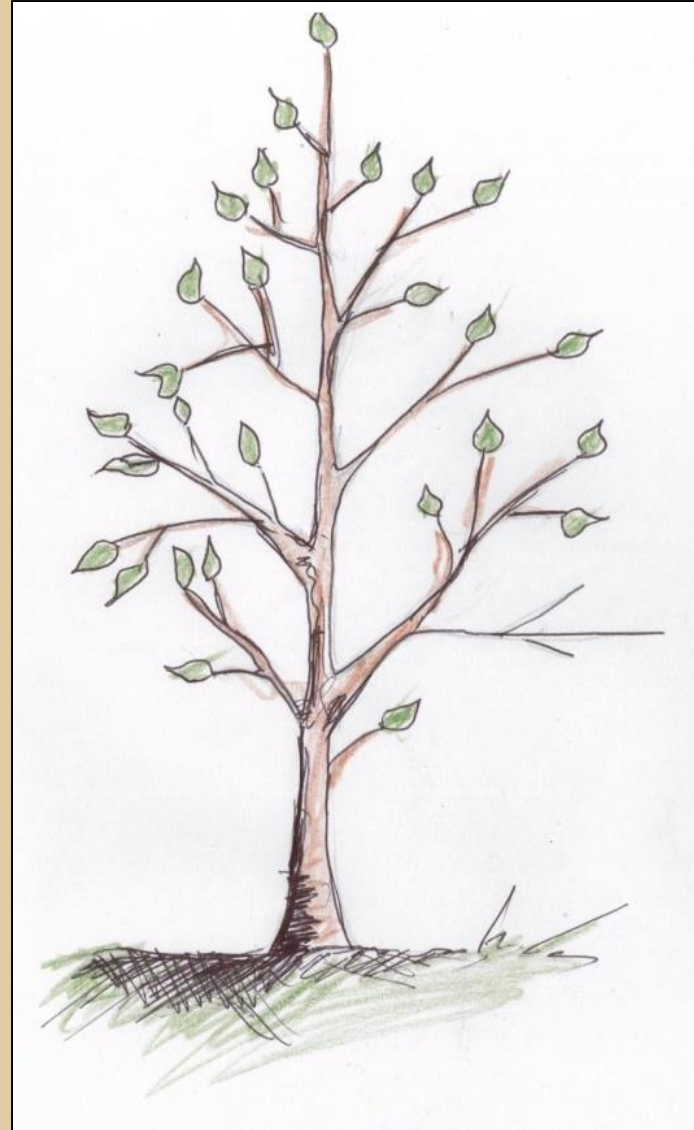




## Medium-aged Trees

- Space main branches 18-36 in apart along trunk
- Reduce length of overextended branches
- Eliminate rubbing/touching branches
- Direct growth to fill gaps in crown
- Pruning dose 25%

# Develop good branch spacing



# Mature Trees

- Remove dead
- Reduce length (remove) overextended branches, those with bark inclusions/cracks
- Remove as little live tissue as possible to accomplish objectives
- Restore storm damaged trees/overpruned
- Pruning dose 10%



# Dead wood and storm renovation



# Pruning Dose



- Severe Pruning
  - >50% on young trees
  - >25% on medium aged trees
  - >10% on mature trees
- Too much can lead to excessive sprouting

# Wrap Up

- Well-sited trees are healthier
- Well-planted trees are healthier
- Properly pruned trees are healthier
- Starting early leads to longer lived, and potentially healthier trees





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