

A Brief Primer on Pruning vs Training of Trees

MGIA Conference
2024

Functional Pruning Practices

- Establishment Training
- Maintenance Pruning
- Risk Management Pruning
- Architectural Pruning
- Production Pruning
- Repair Pruning
- Utility Clearance



Maintenance Pruning



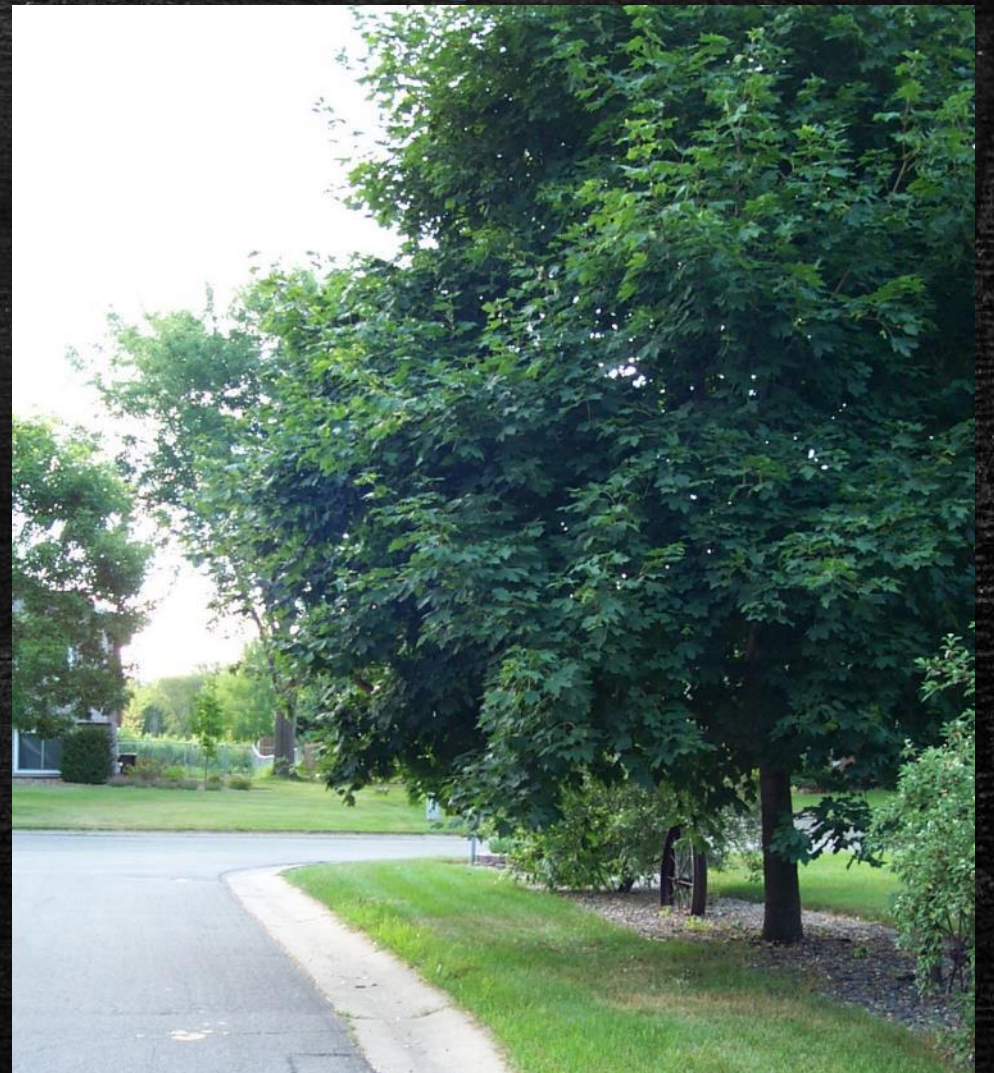
Maintenance Pruning



Removing Suckers & Trunk Sprouts on Osage Orange



Risk Management Pruning



Risk Management Pruning



Architectural Pruning



Production Pruning

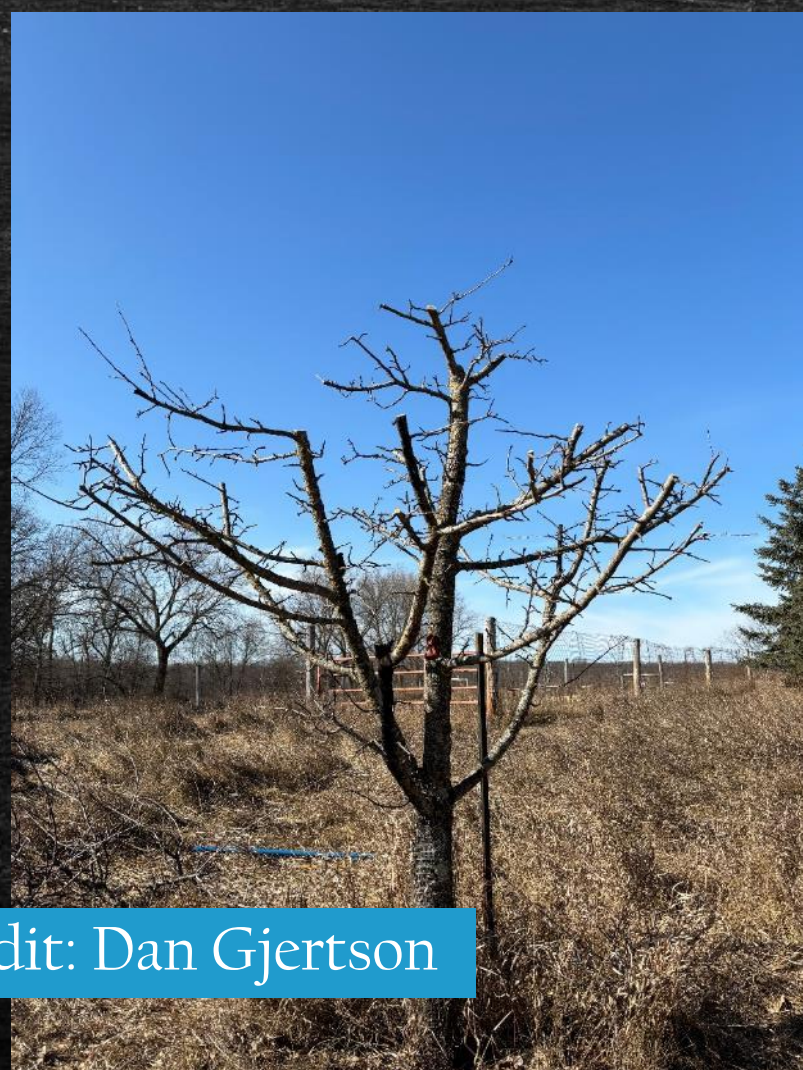


Photo Credit: Dan Gjertson



Repair Pruning



Repair Pruning



Utility Clearance



Research-based Pruning: Making The Cuts

- Smaller Is Better
- Remove Branches With Included Bark
- Remove Codominant Leaders
- Maintain Healthy Live Crown Ratios
- Target Cuts Whenever Possible
- Avoid Flush Cuts
- Pruning Paints Mostly Change Colors
- Minimize Bark Ripping...It's Embarrassing
- Timing?



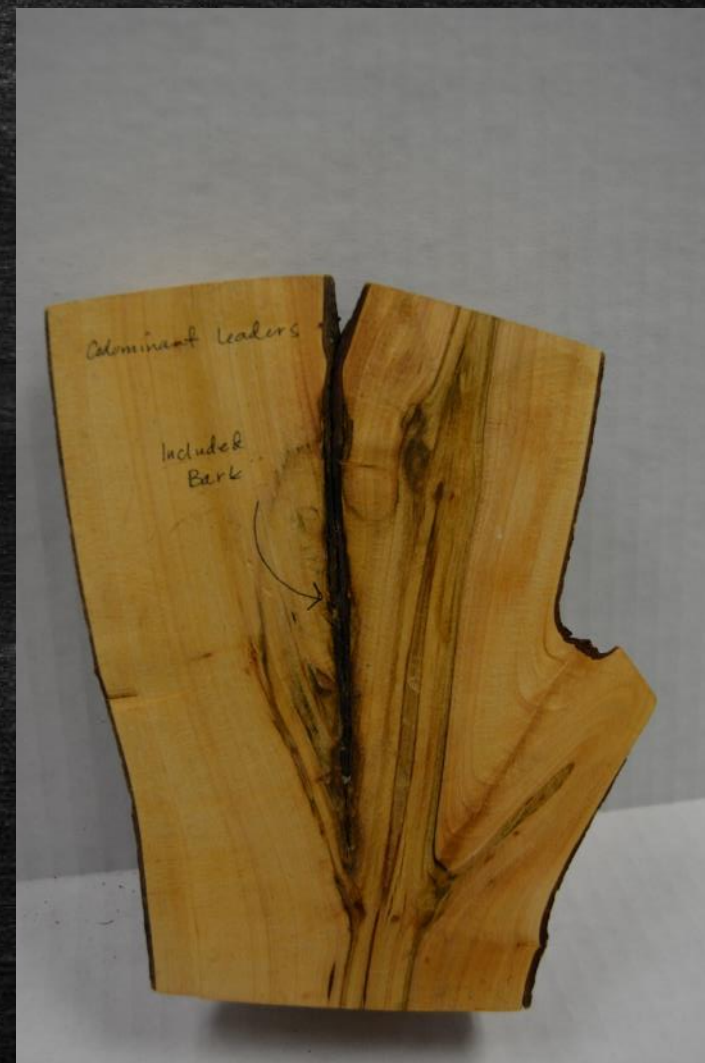
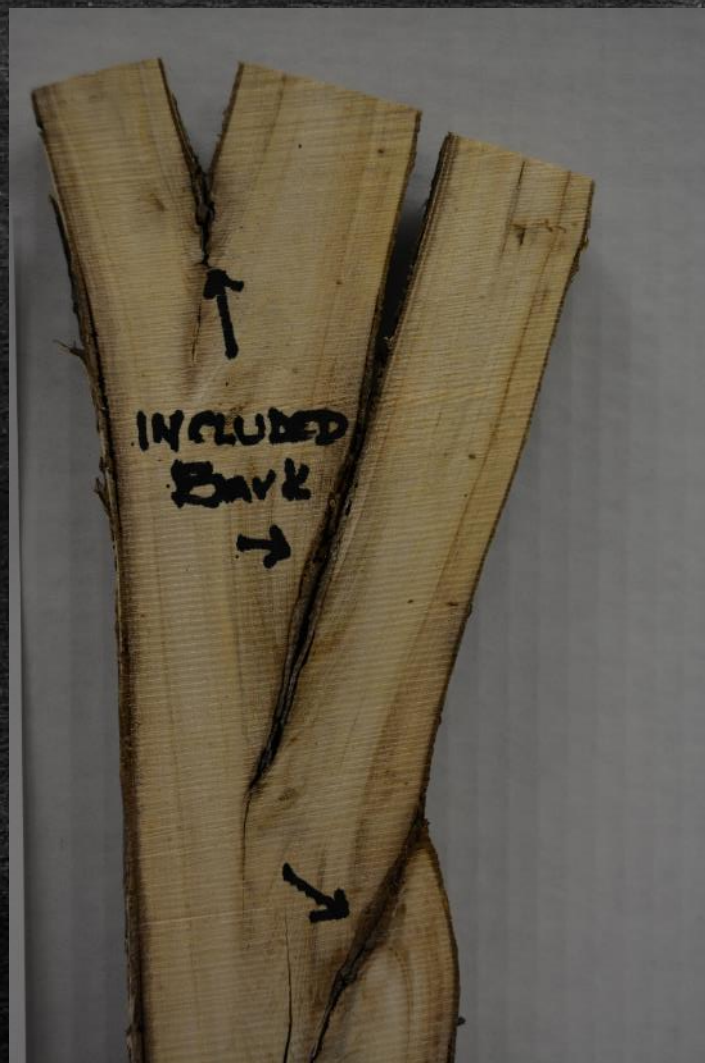
Smaller And Rounder Is Better



Remove Branches/Leaders With Included Bark In Their Unions



Remove Branches/Leaders With Included Bark In Their Unions



Remove Codominant Leaders When They Are Small



...But Not Always. Know Your Tree



Hedge Maple (*Acer campestre*)



Discovery Elm
(*Ulmus davidiana* var
japonica
'Discovery')



Live Crown Ratio (LCR): % of a tree's height that is photosynthetic



100%



60%



30%



Yikes!

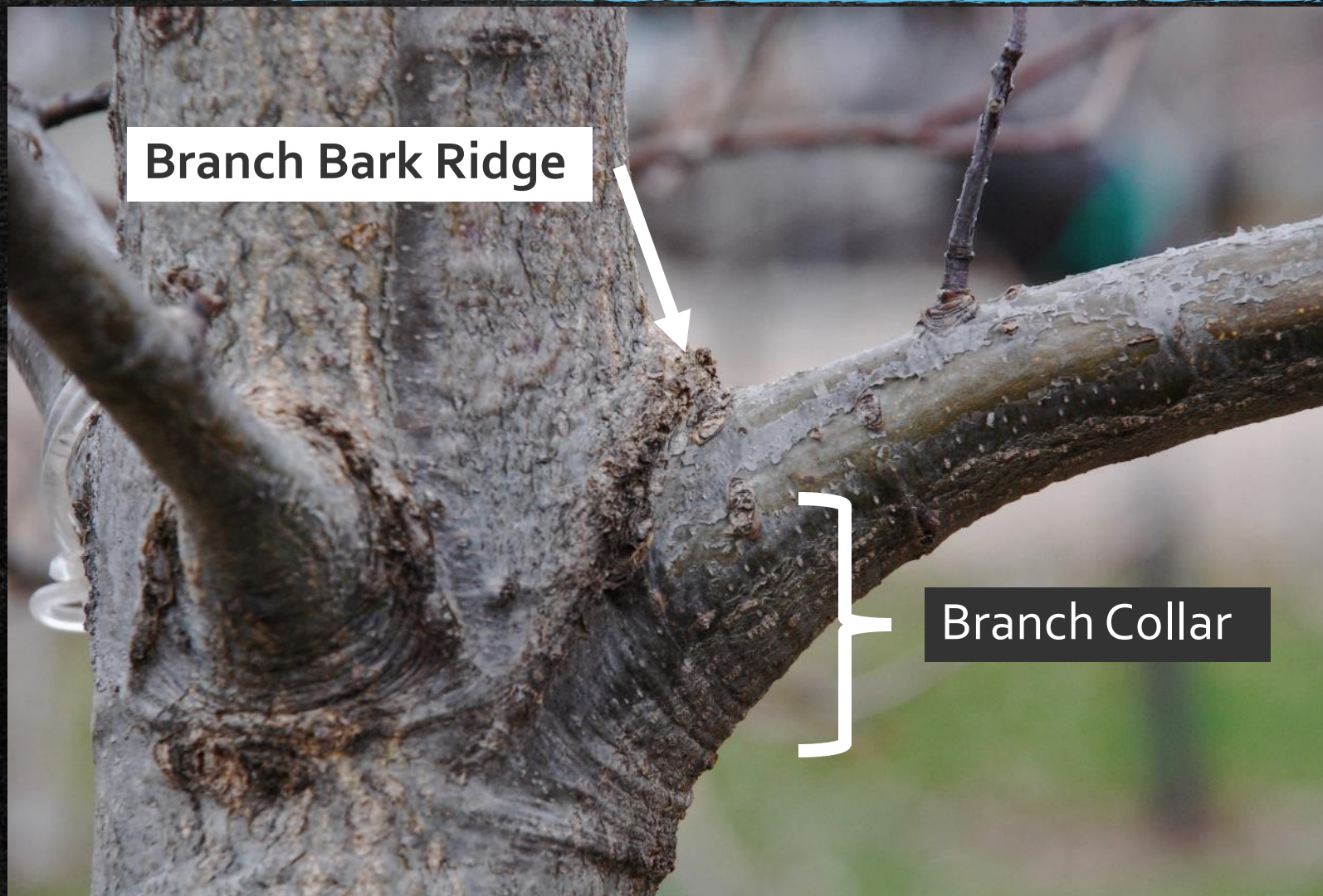
Maintain Healthy 75% Live Crown Ratio For Conifers



Target Cuts, Whenever Possible



Target Cuts, Whenever Possible



I Said...Whenever Possible



Avoid Flush Cuts



Pruning Paints Mostly Change Colors



Minimize Bark Ripping



Timing Of Pruning?



Timing Of Pruning? It Depends

- Winter? Less Debris, Easier To See Tree Form
- Winter? Lowest Chance Of Spreading Oak Wilt
- Winter? Inconclusive For Spreading Dutch Elm Disease
- Late Winter/Early Spring? Best For Fruit Trees
- Spring/Early Summer? Birches & Maples “Bleed?” Tree Have No Blood
- Spring/Early Summer? Wounds Occlude Fastest
- Spring/Early Summer?
- Summer? Best Time For Pines
- Late Summer/Early Autumn? Best For Spruce/Fir

Training Trees: Form Follows Function

- Lawn Tree
- Campus Tree
- Residential Boulevard Tree
- Arterial Boulevard/Alley Tree
- Barrier Tree
- Fruit Production
- Architectural, aka Specialty Training

Young Tree Training (1st 15 years): Lawn Trees



Develop A Tree, Not Correct It

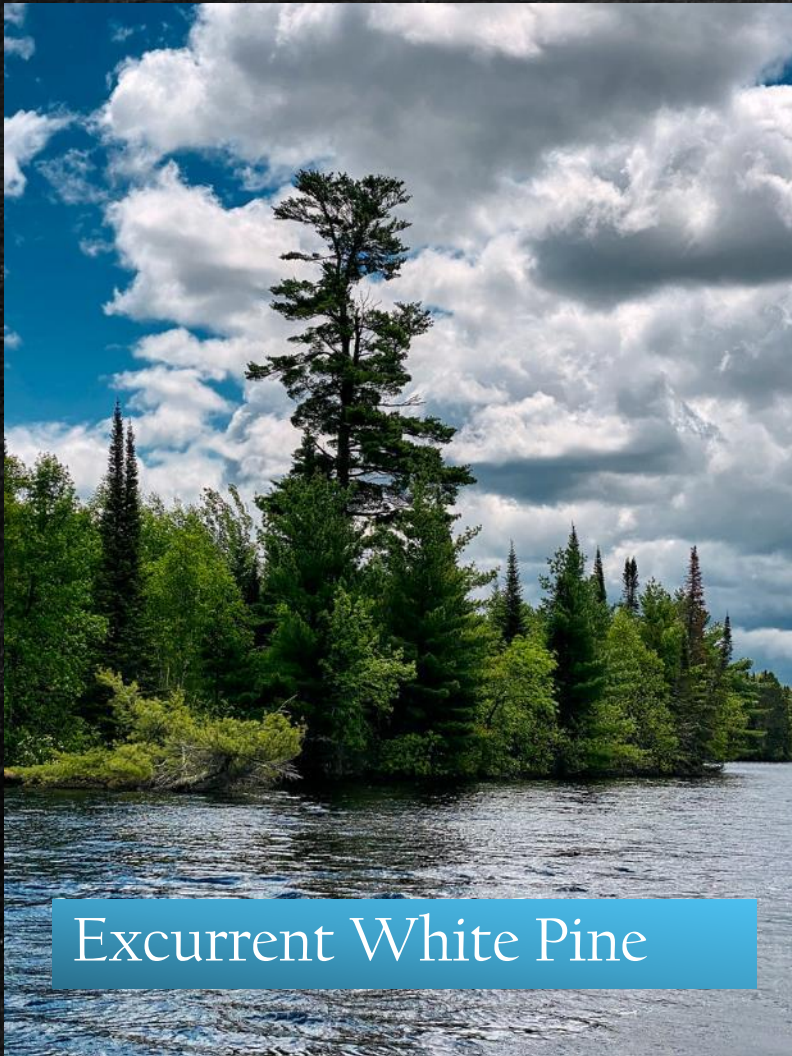
Lawn, Boulevard, Alley Trees: General Goals

- Train Most Trees As Excurrent To Begin
- Crown Raise Gradually, But Keep Healthy LCR
- Allow Medium/Large Trees To Go Decurrent @33-50% Mature Height
- Pruning Cycles @1-5 Years For First 15 Years

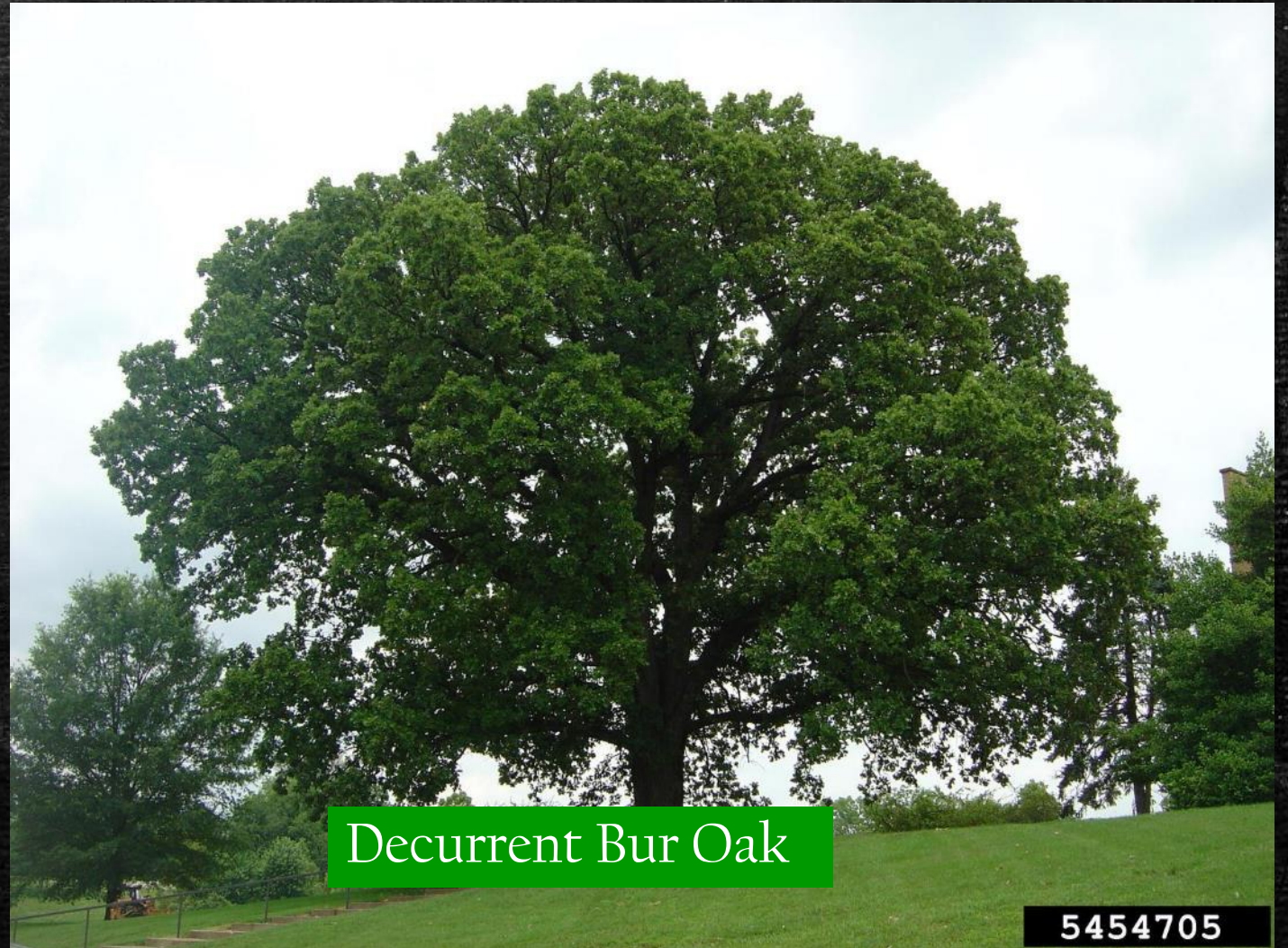
Untrained Young Hackberry



Trees Are Either Excurrent or Decurrent @ Maturity



Excurrent White Pine



Decurrent Bur Oak

5454705

(some) Excurrent Tree Examples

- Firs (*Abies*)
- White Pine
- Douglas-Fir (*Pseudotsuga*)
- Littleleaf Linden
- Northern Pin Oak
- Catalpa
- Big-toothed Aspen



(some) Decurrent Tree Examples

- White Oak (*Quercus alba*)
- Crabapple
- Hackberry
- Sugar Maple
- American Elm
- Hawthorn
- Willows



Train Most Young Trees As Excurrent



Train Most Young Trees As Excurrent



Some Exceptions To The Excurrent Guideline

- Majority Of Apple Trees, Including Crabapples
- Hedge Maple (*Acer campestre*)
- Wafer-ash (*Ptelea trifoliata*) →
- Most Serviceberries (*Amelanchier* species)
- Amur Maple (*Acer ginnala*)
- Witch Hazel (*Hamamelis* species)
- Star Magnolia (*Magnolia stellata*)



Location: Residential Lawns, Gardens, Sidewalks



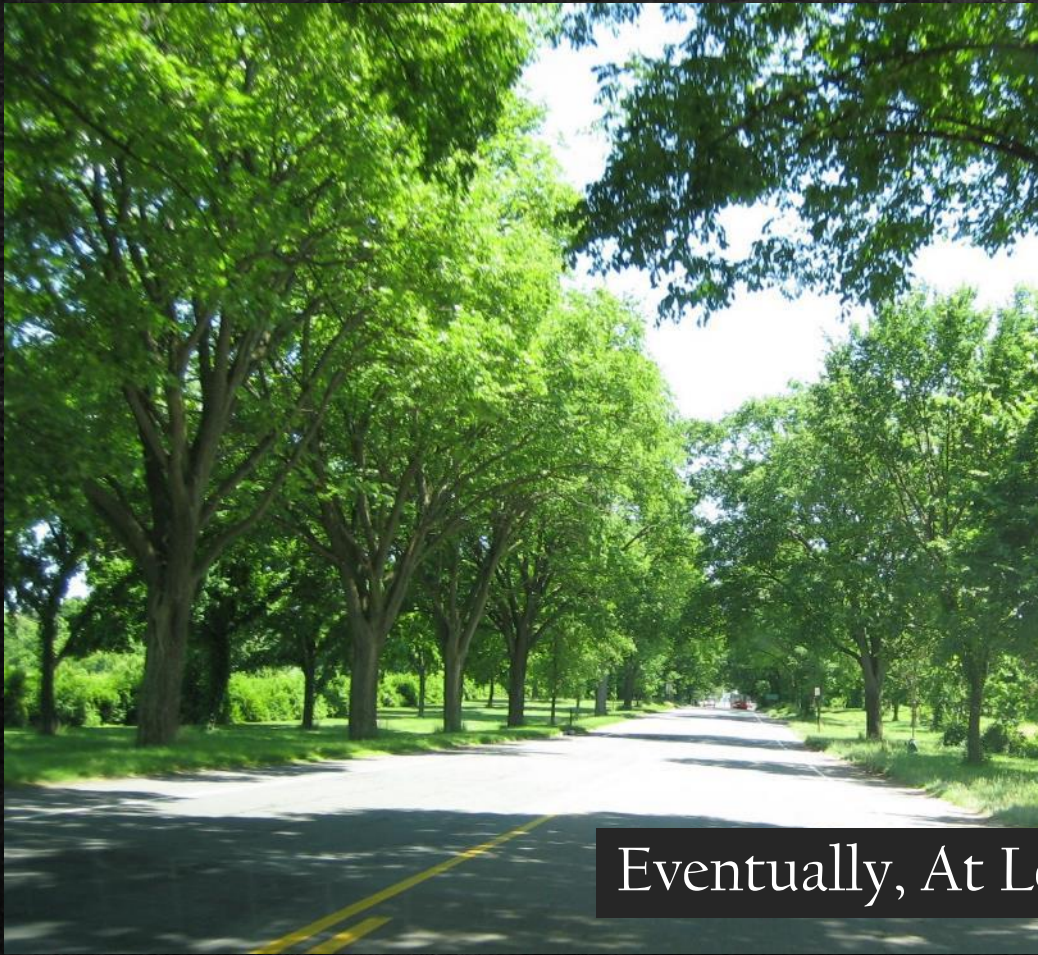
6.5' Or More Clearance

Parks And Campuses



8+ Feet Of Clearance For
Maintenance Equipment

Boulevard/Street/Alley Trees



Eventually, At Least 14' Of Clearance

Crown Raise Gradually, Keeping Healthy LCR



Boulevard Tree Clearance: 14 Feet

Campus/Park Tree Clearance: 8.5 Feet

Residential Lawn Tree Clearance: 6.5 Feet

When To Allow Medium To Large Trees To Go Decurrent?



Acceptable Decurrent As A Function of Size



Small Trees Can
Safely Become
Decurrent Low To
The Ground

Acceptable Decurrent As A Function of Size



Larger Trees Ideally
Become Decurrent
At About $1/3$ - $1/2$
Ultimate Height

Too Low To Become Decurrent



Coffeetree
(*Gymnocladus*)

Princeton Elm



One-Three Year Pruning Cycles

The Fastest:

- Valley Forge Elm
- Princeton Elm
- Cathedral Elm
- Willows
- Cottonwood
- Silver Maple
- Most Aspen
- Freeman Maples
- Tulip Poplar aka Tulip Tree
- Yellowwood
- Mancana Ash



Princeton Elm

PHOTO CREDIT: MISSOURI BOTANICAL GARDEN



Autumn Blaze Maple

Three To Five Year Pruning Cycles

Won't Win Any Races:

- Katsura Tree
- Ironwood
- Musclewood
- Hemlock
- Ginkgo
- Bur or White Oak
- Sugar Maple
- Ohio Buckeye
- Balsam Fir
- Honeylocust
- Coffeetree
- Hackberry



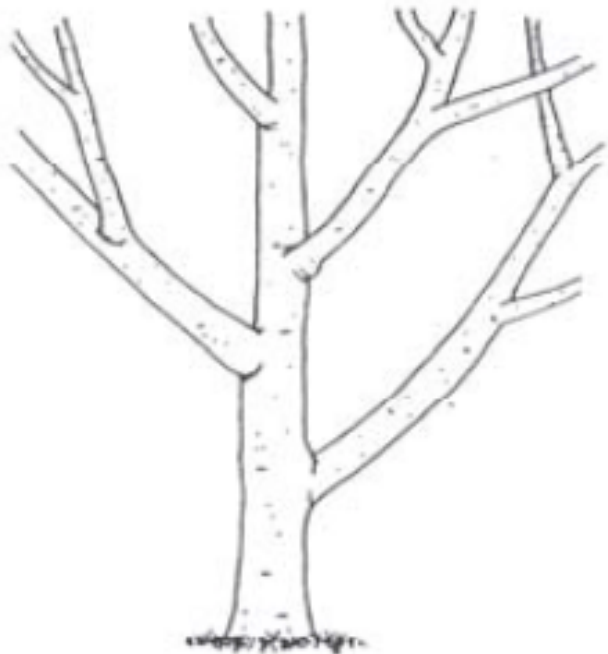
Katsura Tree

Pruning Apples For Fruit Production

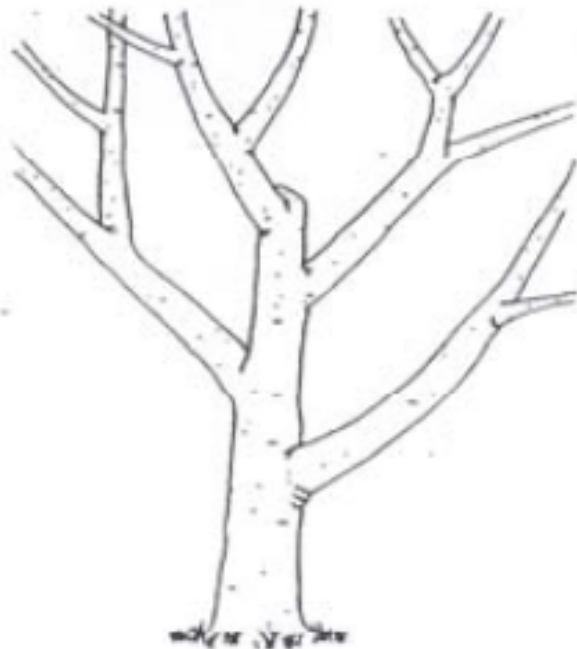


Control Height For Fruit Trees or Anything

Central Leader



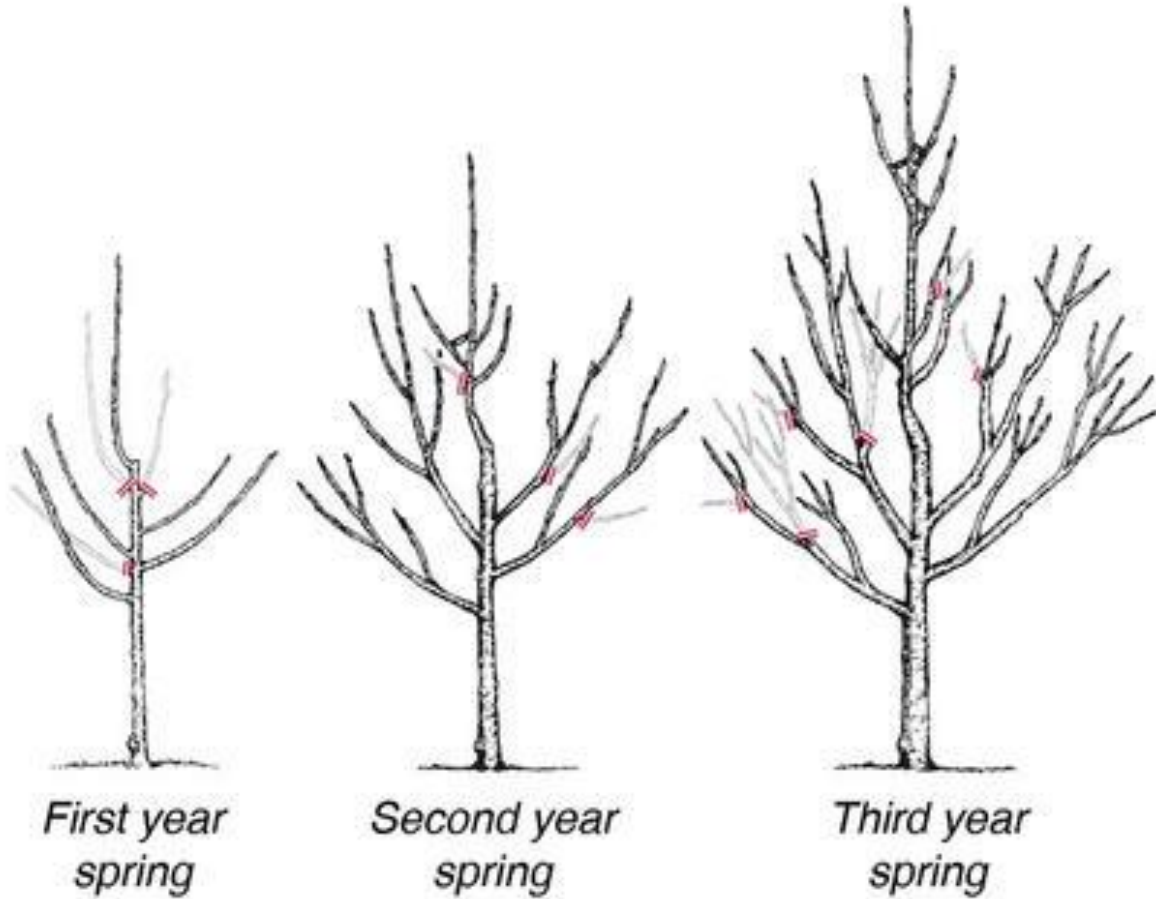
Modified Central Leader



Vase or Multiple Leader



Central Leader On Dwarfing Rootstock



Central leader pruning



Modified Leader For Height Control

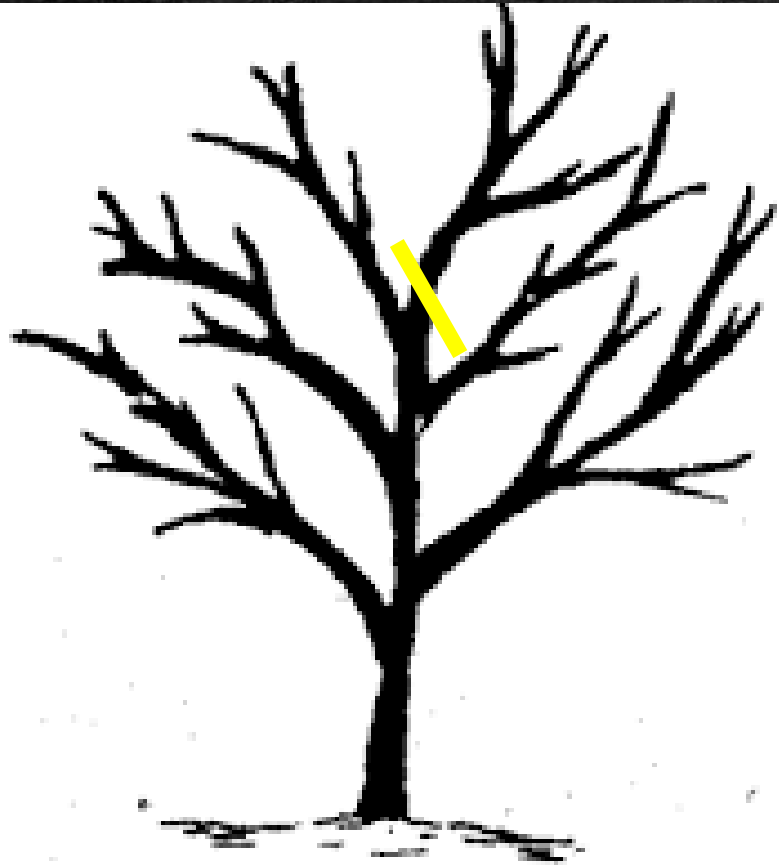


Fig. 7.3 Modified leader system



Vase Or Multiple Leader System



Spacers To Eliminate Inclusion & Codominance



Architectural aka Specialty Tree Development



Photo: Wikimedia Commons user Charles01

Rows of willow trees two years after pollarding.

Selecting And Setting Up An Espalier



Selecting And Setting Up An Espalier



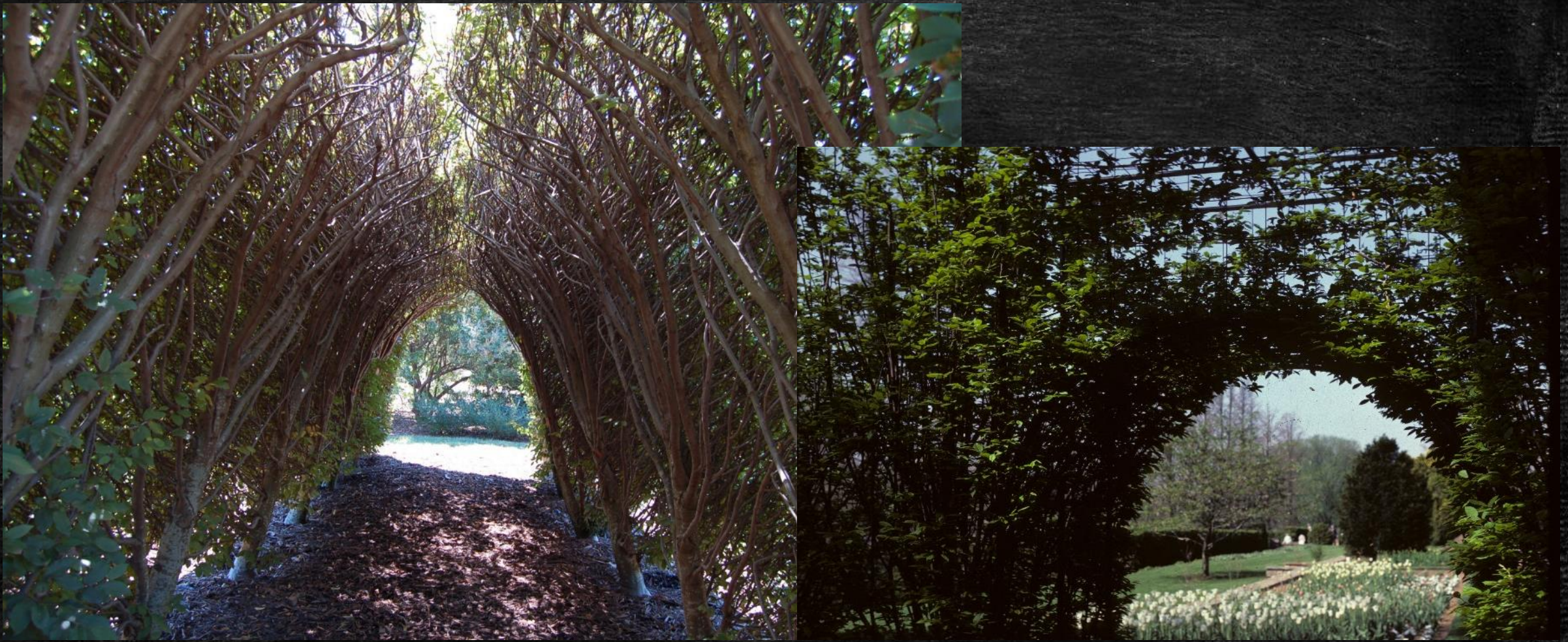
Selecting And Setting Up An Espalier



Selecting And Setting Up An Espalier



Selecting And Setting Up A Pleached Tree Group



Selecting And Setting Up A Pleached Tree Group



Selecting And Setting Up A Pleached Tree Group



Selecting And Developing Topiary



Selecting And Developing Topiary



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Selecting And Developing Topiary



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