Rockbridge Extension Master Gardeners

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Woody Landscape Plants

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Bedford Extension Master Gardener

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Welcome to 'Woody Landscape Plants'

In this module you will learn how to select, plant, prune and care for trees and shrubs. You will learn the most common problems impacting trees and shrubs in this geographic area and their recommended management.

- Read Chapter 13, in your Master Gardener Handbook before viewing these slides
- Browse the Suggested Readings at the end of these slides. They contain online sources that will be helpful for your learning
- The Game at the end is for fun and review

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What I Will Learn in This Module (Objectives)

- The definition of: woody plants; trees; herbaceous plants; shrubs
- Basic guidelines for selecting, purchasing, and planting trees and shrubs
- Basic guidelines for maintaining new and established trees and shrubs
- Important characteristics of the most common trees and shrubs in the area
- The most common insects and diseases that affect trees and shrubs in the area and their recommended management
- Reasons and guidelines for pruning woody ornamentals

What I Will Become Familiar With

- Basic guidelines for winterizing trees and shrubs
- Protecting and repairing trees during construction projects
- Plant selection for shade
- Recommended varieties for the area

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Benefits of Tree Planting

Environmental Benefits

- Filter air pollutants
- Reduce storm water runoff
- Counter the urban heat island effect
- Provide wind breaks
- Reduce glare

Economic Benefits

- Increase property values
- Attract business
- Attract customers
- Reduce energy costs

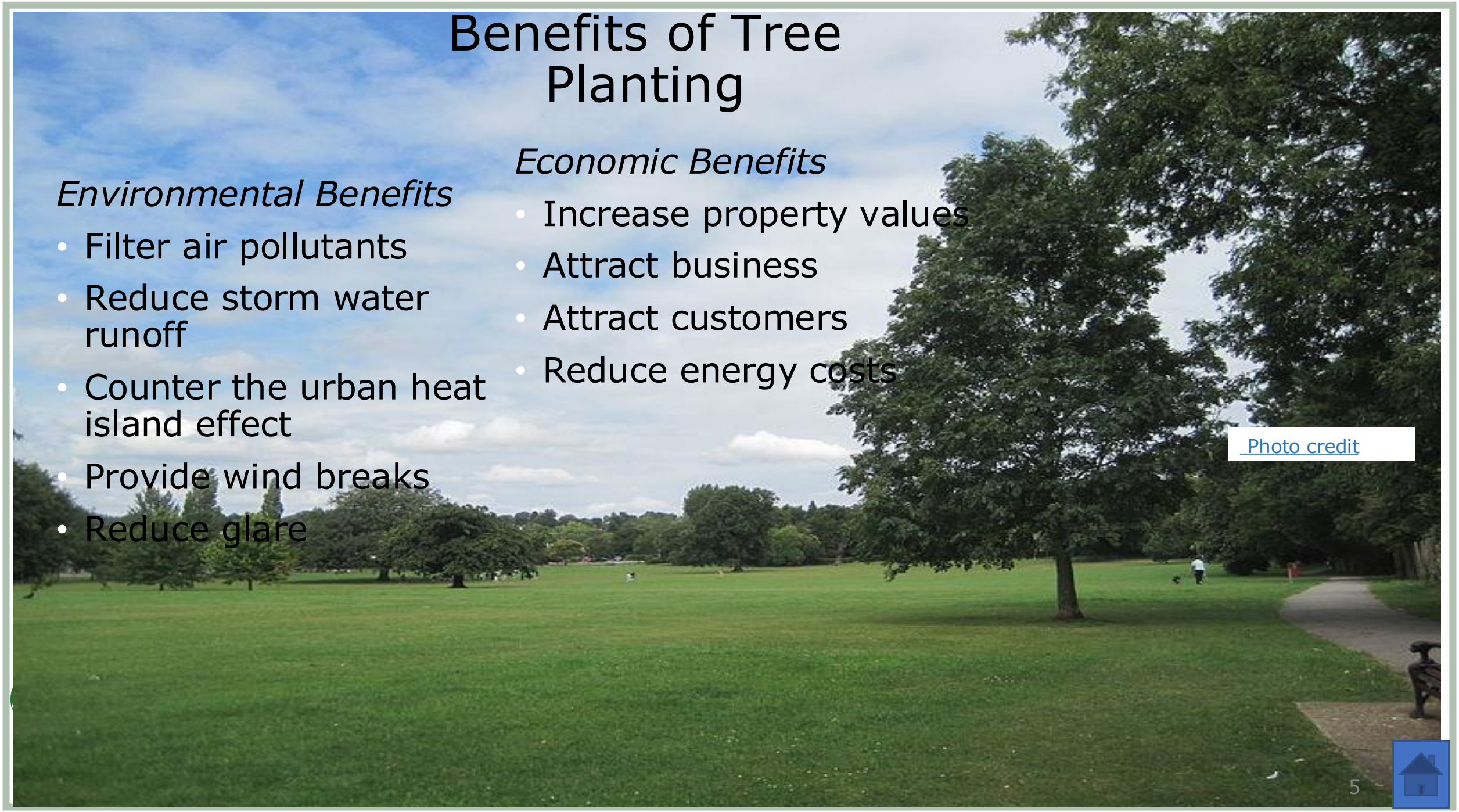

Photo credit

Benefits of Tree Planting

Social Benefits

- Improve public health
- Reduce violent behavior
- Increase community pride
- Beautify the landscape
- Recreation and relaxation

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In a 40-Year Lifespan, a tree will..

- Sequester 1 ton of CO2
- Reduce air conditioning needs by 30%
- Trap pollutants & control runoff; clean our air
- Add habitat
- Provide us with oxygen
- Clean our drinking water
- Help save energy
- Increase property value







Photo credit

Tree Facts

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Planting, Pruning & Caring..


Photo credit

Planting

- "Right Tree, Right Place"
- Roots & Root Flares
- Types of planting materials/methods
- How to dig a hole!

Pruning

"who, what, when, where, why"

Caring

Watering, Staking, Mulching, Fertilization

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Right Tree, Right Place



Photo credit

Matching tree to environment

- Tree considerations: Hardiness, light, pH, size/width, growth rate, litter/fruiting, disease & insect susceptibility

- Site considerations: sun/shade mix, soil type & drainage, pH, above-/below-ground utilities, surrounding structures, site lines, etc.

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Choose Quality Stock

Avoid purchasing trees with:

- Broken branches or poor architecture
- Multiple Leaders
- Signs of insects or disease problems
- Poorly maintained, under watered

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Look For…

- Strong, well-developed leader (or leaders in mul leader tree)
- Bright, healthy bark
- Trunk & limbs free of insect or mechanical injury
- Branches well distributed around trunk, consider smaller caliper than trunk
- Ideal spacing between branches at least 8-12” for most species

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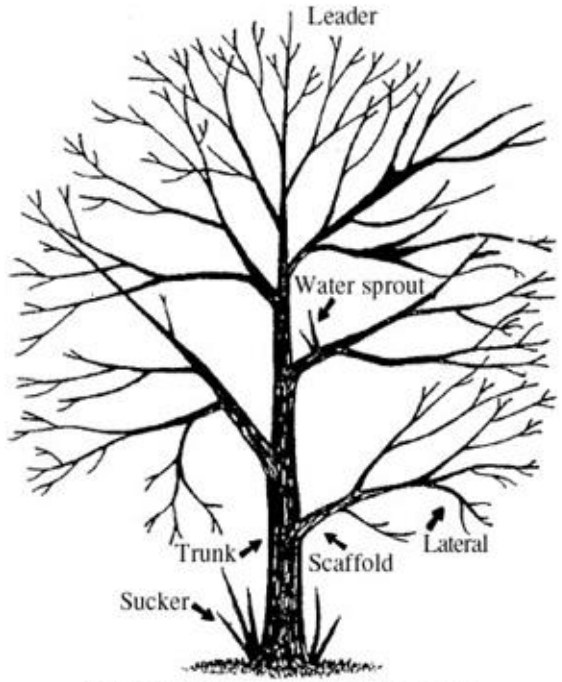

Typical above-ground tree framework

A Guide to Successful Pruning: A Guide to Pruning Deciduous Trees

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Look For …

- Good trunk taper
  - Stabilizes trunk to hold crown and withstand wind
  - Leaving lower temporary lateral branches on trunk and allowing the trunk to move in the wind promotes caliper and taper
- Wide angle crotches for strength
- Low branches - are temporary, but help develop taper; promote trunk caliper growth and prevent sun damage.
- Healthy buds

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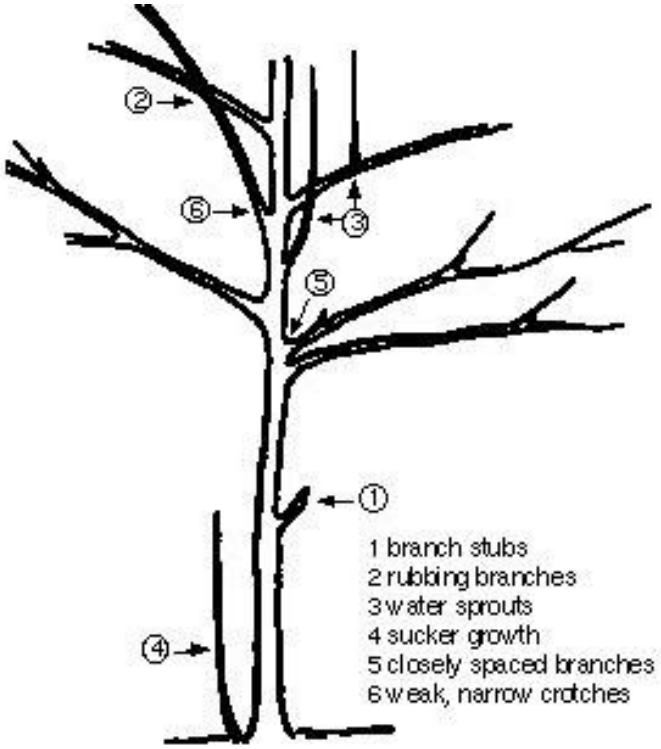

Pruning Trees and Shrubs

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Plants for Shade

Providing shade usually requires tall, sturdy, long living species.
Density of foliage determines the amount of shading.

Choosing shade trees:

- Avoid those susceptible to wind damage, insects or disease
- Avoid those that produce an over-abundance of objectionable fruit or seed
- Know your planting site (room for top; room for roots; soil type)
- Buy a quality plant (it's a big investment)
- Trees 5-8 feet tall, balled & burlapped or container grown are best
- For a description of some specific trees see the following web site:

Selecting Landscape Plants: Shade Trees

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Plants for Shade

Potential Problems for Shade Trees:

- Lindens, magnolias, pines, and maples other than the silver maple are susceptible to root girdling

Photo credit



Photo credit

- Verticillium wilt is one of the more common and destructive diseases of shade and ornamental trees



Anthracnose affects many popular shade trees, including sycamore, ash, oak, maple and walnut

Anthracnose of Trees

Photo credit



Verticillium Wilt of Shade Trees

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Planting

Photo credit



Trunk & Shoots

- Above ground, has bark for protection
- Need oxygen for respiration
- Need light for photosynthesis

Roots

- Below ground, will respond to light (grow away from)
- Absorb water & nutrients
- Need oxygen for respiration

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How to Kill Your Tree: “Deep Planting”



Roots Responding to Planting Depth Photo credit

Photo credit



Six years after planting 12 inches too deep; Roots all at surface

- The tree will Die from suffocation or
- Adapt: roots will grow upwards to top 6-8” of soil causing problems as tree grows

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Deep Planting

How can you tell if existing trees are “deep planted?”

- Trunks enter the ground ‘flush’
- Thinning canopies
- Early fall coloration
- ‘Decline’

No good remedy other than prevention

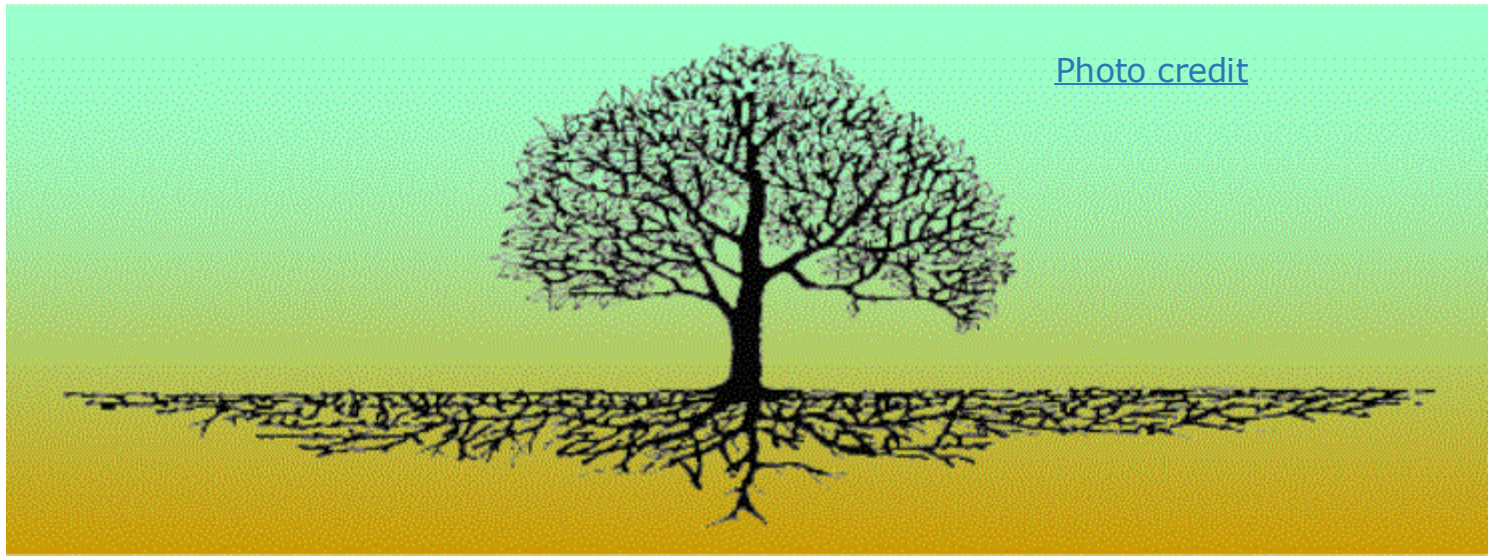


Photo credit

Deep Planting

Proper Tree Planting

The root flare of a tree will be even with (or higher than) the natural soil grade of planting site.



Roots will grow away from trunk in top 6-8” of soil.

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Planting Trees

Root Flare

Is ‘set’ at germination

Oldest part of tree

- Support
- Storage

Area of transition from root tissue to trunk tissue



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Types of Planting Materials

- Bareroot
- Ball & Burlapped (B&B)
- Containerized / Container grown

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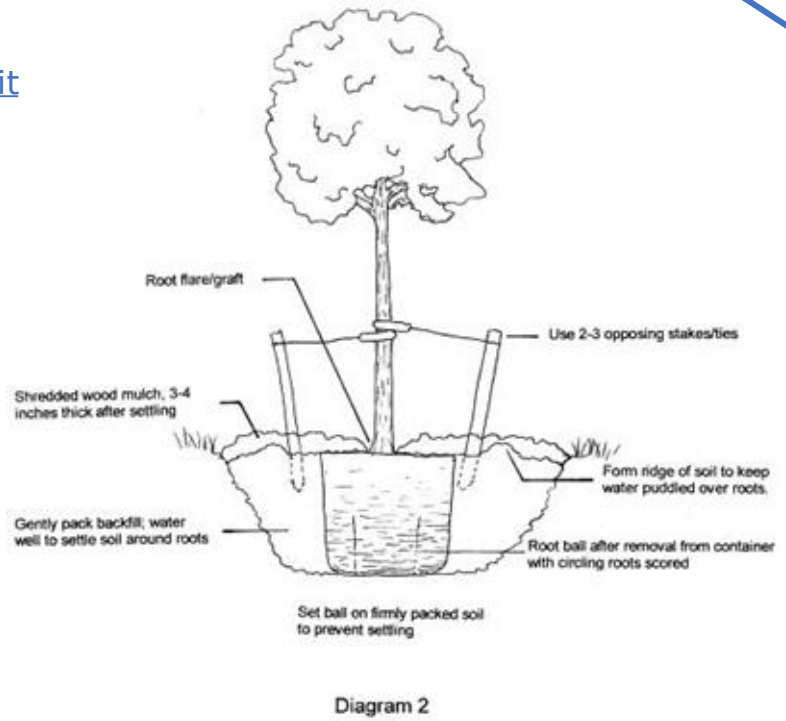

Diagram 2

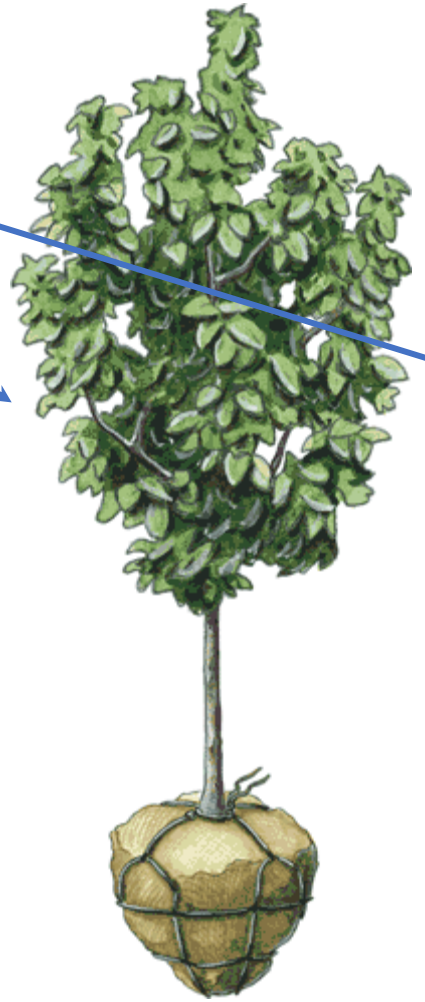



Photo credit

Must find the root flare in each

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[How to Plant Bare Root Trees]
[How to Plant Balled and Burlapped Trees]

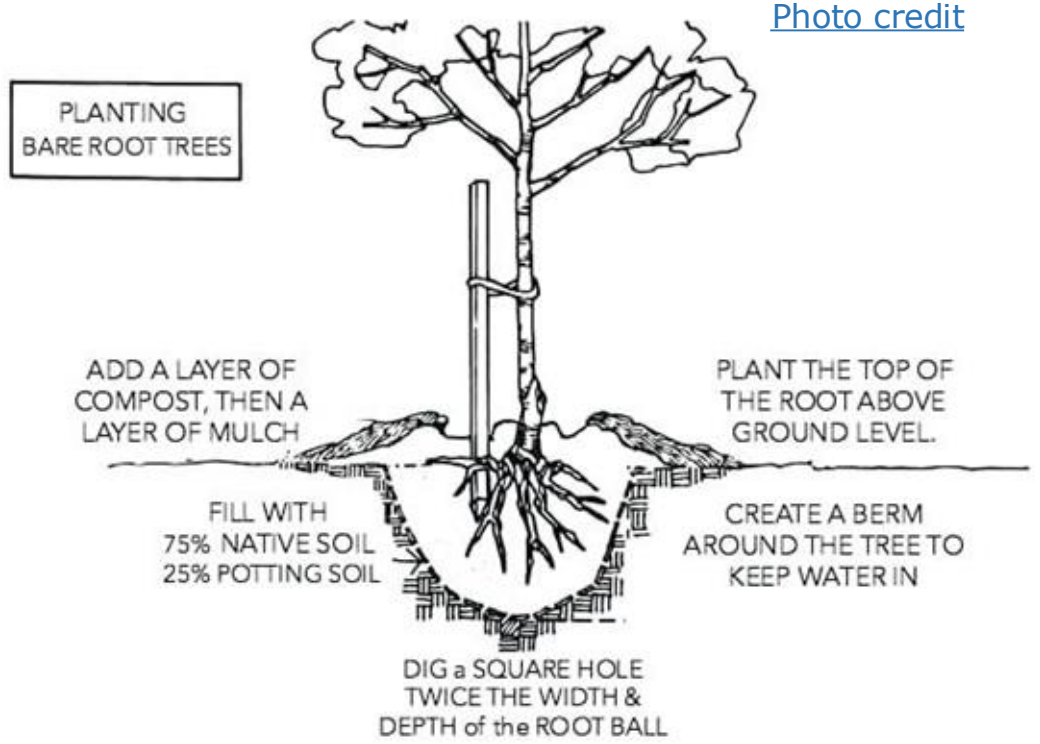
Bareroot

PROS:

- Lightweight
- Easy to find root flare
- Assess root system health

CONS:

- Tree must be dormant
- Reduced planting time
- Limited selection



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Ball & Burlapped

PROS:

- Wide selection
- Large trees
- Large window to plant

CONS:

- HEAVY
- Expensive
- Difficult to find root flare

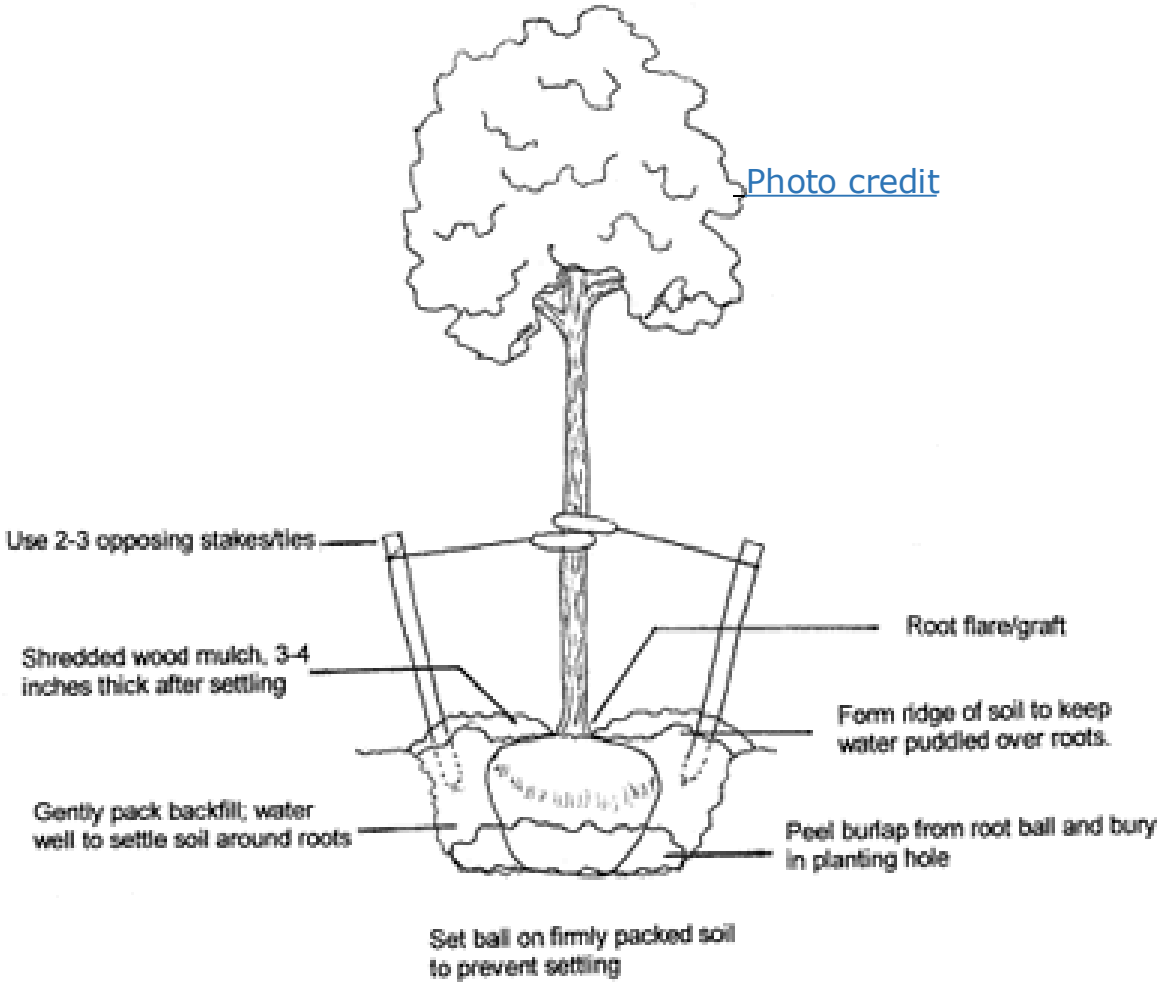

Diagram 3

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Containerized

PROS:

- Wide selection
- Cheaper
- Large window to plant

CONS:

- Circling roots
- Difficult to find root flare

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Call Before Digging

Call Miss Utility!

Remember, even if your project is small, it's always best to call. It's a free service!

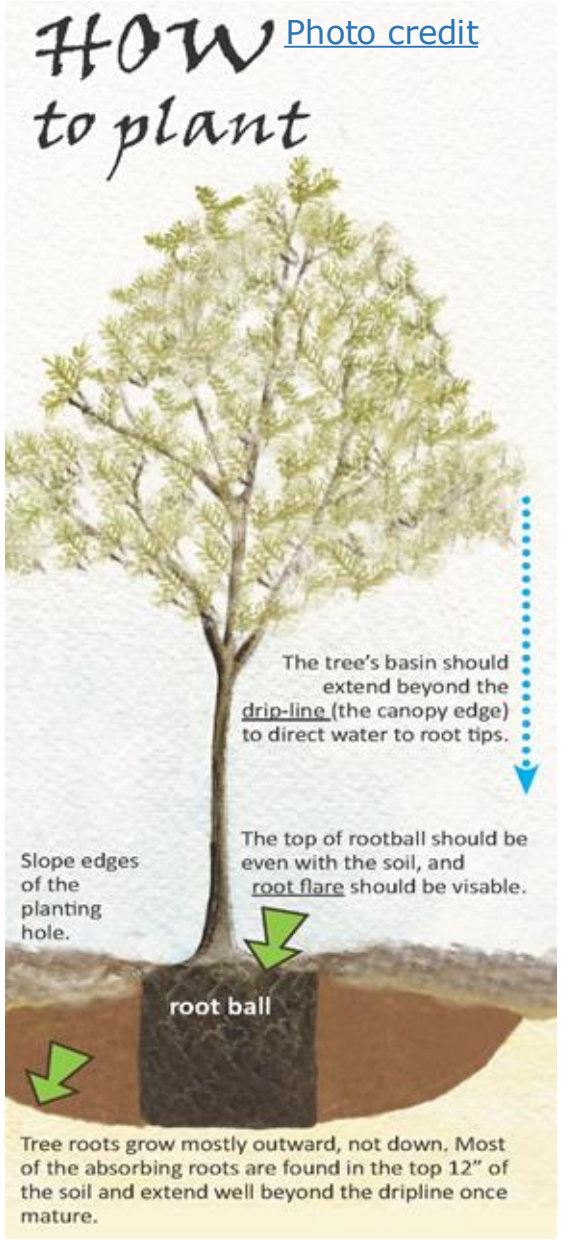
Homeowners should contact Miss Utility of Virginia by calling 811 or 1-800-552-7001 at least 48 hours (excluding weekends and legal holidays) before beginning any digging project

Plan Ahead Before Planting

- Prune roots 3-6 months prior to digging up the tree
- Transplant when dormant

How to Dig a Hole

- Dig hole 2-3 times wider than root system (how wide depends on whether the plant is bare root, container grown, or balled & burlaped)
- Dig hole deep enough to put root flare at the natural soil grade or 1-2” higher
- Slope & roughen sides of planting hole
- Leave bottom of hole undisturbed



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[How to Plant Trees]

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[Planting a Tree or Shrub]

How to Fill a Hole

- Backfill ONLY with soil native to the site
- Amendments can cause moisture problems
- Promote roots to expand into surroundings
- Do not tamp / compact soil
- Get dirty! Crumble soil and fill crevices carefully by hands
- Use water to eliminate large air pockets

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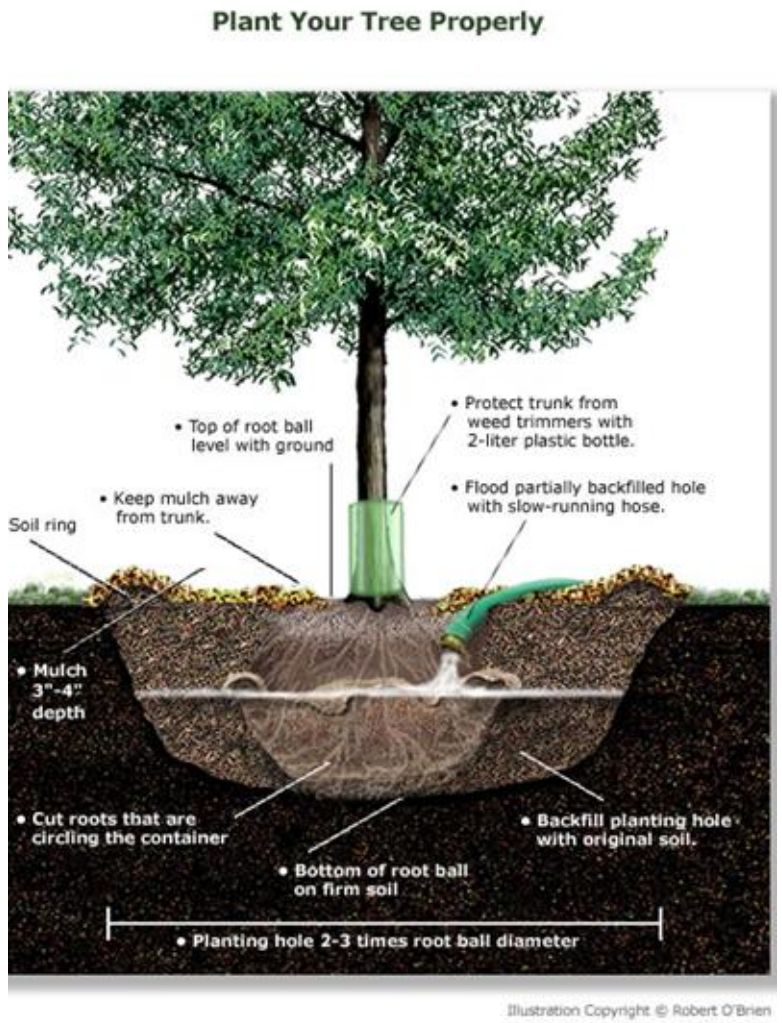

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Post Planting Care

Water

- Provide trees with 1-2” of water per week for first growing season

Drip hose, lawn sprinkler…



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Post Planting Care



Photo credit

Staking

- Especially important for bareroot
- Secure tree loosely
- Drive stakes outside root system
- Wide straps best
- Remove after one growing season



Support left too long
can damage tree



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Post Planting Care

Photo credit



Mulching

- Add 2-4” of bark chips
- Avoid volcanoes!
- Holds moisture in soil
- Improves soil structure
- Insulates roots from extreme temperatures
- Keep mowers away!
- Aesthetics: little to lots
- Remove grass, add flowers

Selection and Use of Mulches and Landscape Fabrics

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Post Planting Care

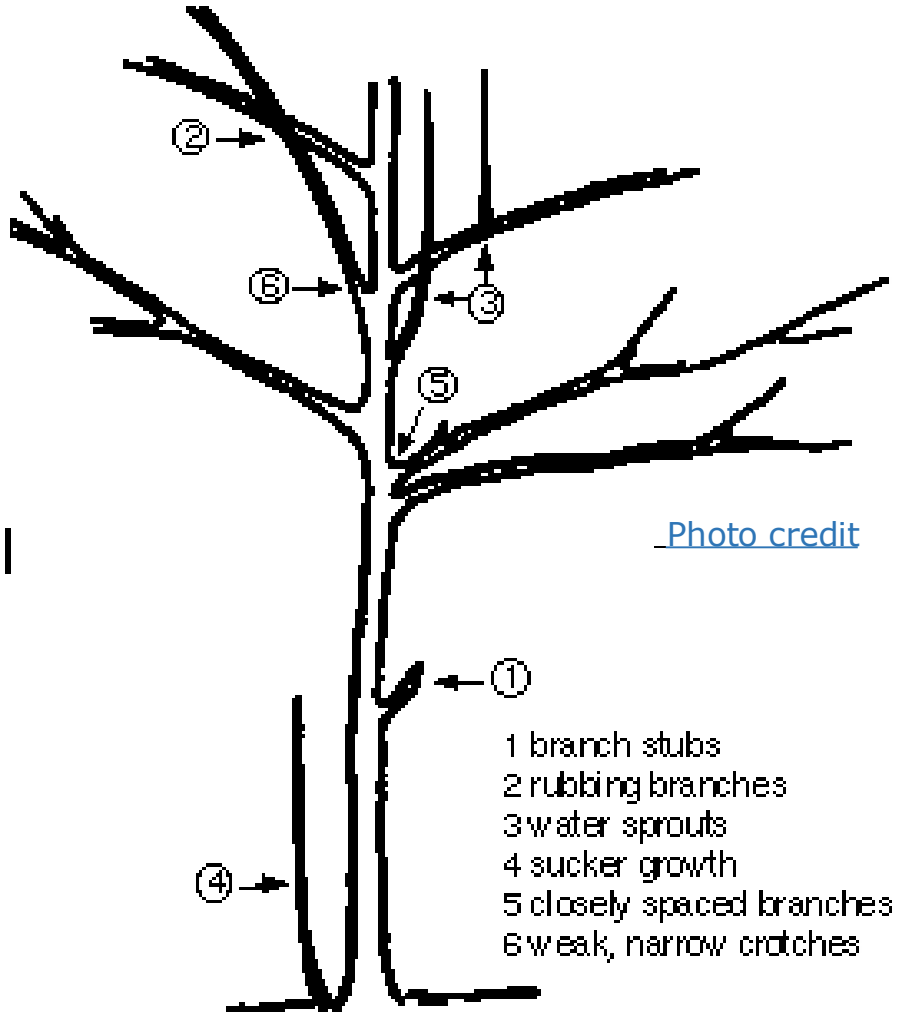
Pruning

- Only remove damaged branches at time of planting

- Designate 'temporary branches' for eventual removal

Fertilization

- Not necessary



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Tree Planting Summary

- Find root flare of tree
- Dig hole wider than roots, no deeper than flare
- Align tree in hole as desired
- Backfill with native soil, no tamping
- Stake if necessary for 1 season
- Water as needed
- Prune only broken, diseased branches

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Pruning Woody Ornamentals

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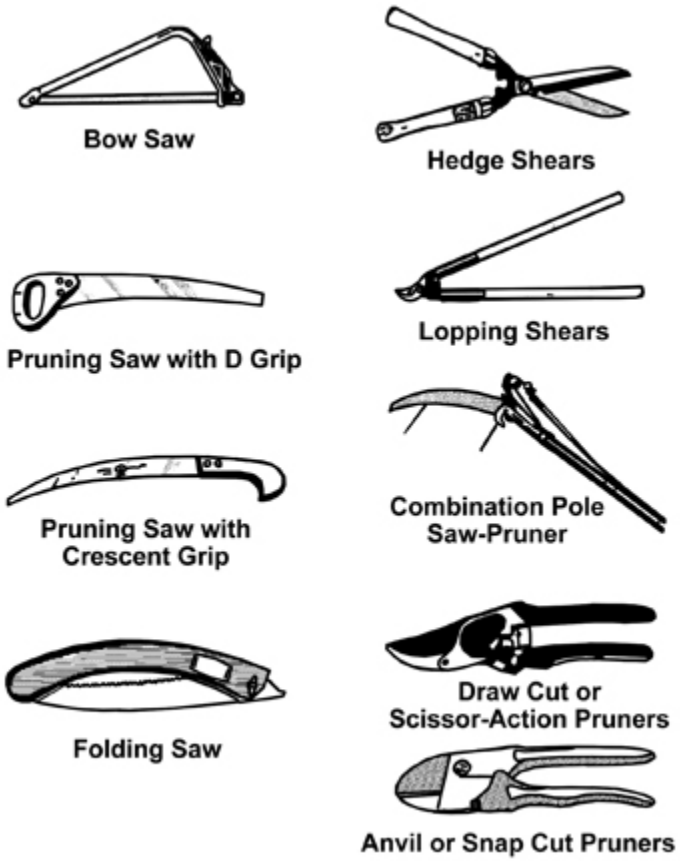

Click on the picture for information on all these pruning tools

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First….A Brief Note About Pruning Standards

TCIA: Tree Care Industry Association (TCIA)
Has developed standards, The American National Standards Institute (ANSI A300), which specify writing guidelines for arborists, urban foresters, horticulturalists, landscape architects and contractors.
This standard recommends, and in some cases requires, that the use of certain tools, cutting techniques and pruning methods be followed.

Arborists adhering to the ANSI A300 pruning standard will not:
leave branch stubs; make unnecessary heading cuts; cut off the branch collar (not make a flush cut); top or lion's tail trees;
remove more than 25 percent of the foliage of a single branch;
remove more than 25 percent of the total tree foliage in a single year; damage other parts of the tree during pruning; use wound paint; prune without a good reason; climb the tree with climbing spikes

Pruning deciduous trees

Why prune?

When to prune…

What to prune…

Where to prune…

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Why prune?

- Control size
- Remove dead / dying branches
- Remove overlapping / rubbing branches
- Encourage fruit and flower
- To shape
- Security (around home)

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When to prune

The late dormant season is the best time for most pruning. This is the time to prune plants that bloom on the current year's growth.

Rationale:

- Wounds will be exposed for only a short length of time before new growth begins the wound sealing process
- Easier to make pruning decisions without leaves obscuring plant branch structure
- Avoid certain disease and physiological problems

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When to prune: Some specific examples:

To avoid oak wilt do not prune April 15 – June (October)

Spring/summer pruning increases chances of fireblight

Maples and Birches are prone to bleeding (“Bleeders”) with spring pruning

When to Prune

Trees and shrubs that bloom early in the growing season on last year's growth should be pruned after they finish blooming, no later than June 15th.

Examples:

Apricot
Azalea
Lilac
Cherry
Chokecherry
Juneberry
Flowering plum
Chokeberry
Magnolia
Forsythia

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When to Prune

Shrubs grown primarily for their foliage rather than showy flowers should be pruned in spring, before growth begins

Examples:

- Dogwood
- Purpleleaf sand cherry
- Barberry
- Honeysuckle
- Smoke bush
- Ninebark
- Sumac
- Burning bush

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What to Prune

- Remove broken, diseased, dying or dead branches
- Select a leader and remove competing leaders
- Select the lowest permanent branch and remove temporary branches below the lowest permanent branch
- Select scaffold branches and cut back or remove competing branches

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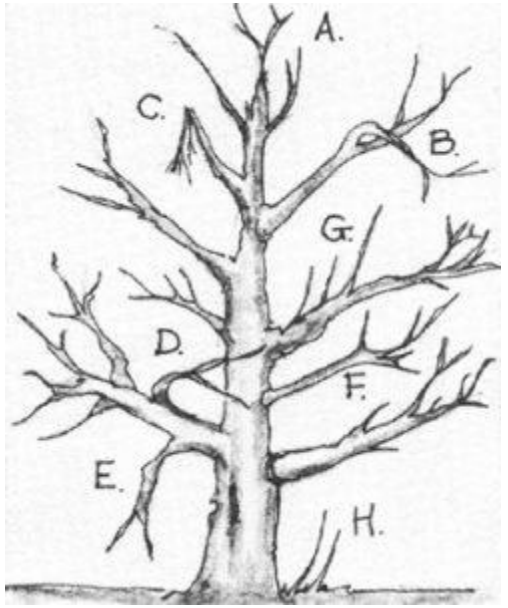

A. Weak Crotches
B. Crossing Branches
C. Dead or Broken
D. Growing Toward Trunk
E. Growing Down
F. Remove to Open
G. Watersprouts
H. Suckers

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Pruning

What to Prune

- Prune less than 25% of canopy
- Prune branches greater than 1/3 the diameter of the trunk at the point of attachment
- Double leaders
- Poor branch unions “V” vs. “U”

Where to Prune: Cut at the 'Branch Collar'

Branch Collar…

… a swelling at the branch union from the yearly addition of tissues to the branch and trunk

Branch Bark Ridge…

… forms where trunk tissue contacts branch tissue

- Pruning cuts should **not** be made into the Branch Bark Ridge

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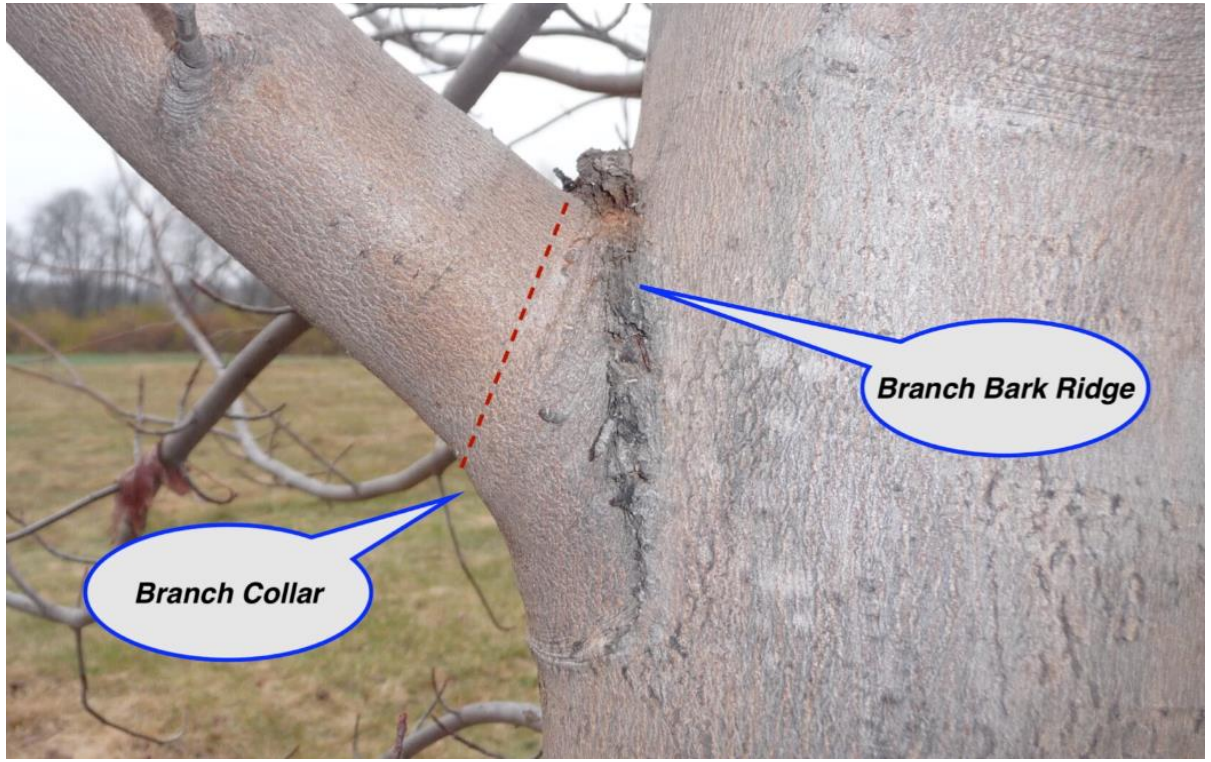

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Scaffold Branches

- Scaffold branches give shape to the tree's canopy
- Spaced minimum of 12" apart
- Radiate around the tree
- Best 1/3 size of trunk
- No more than 2 at any point

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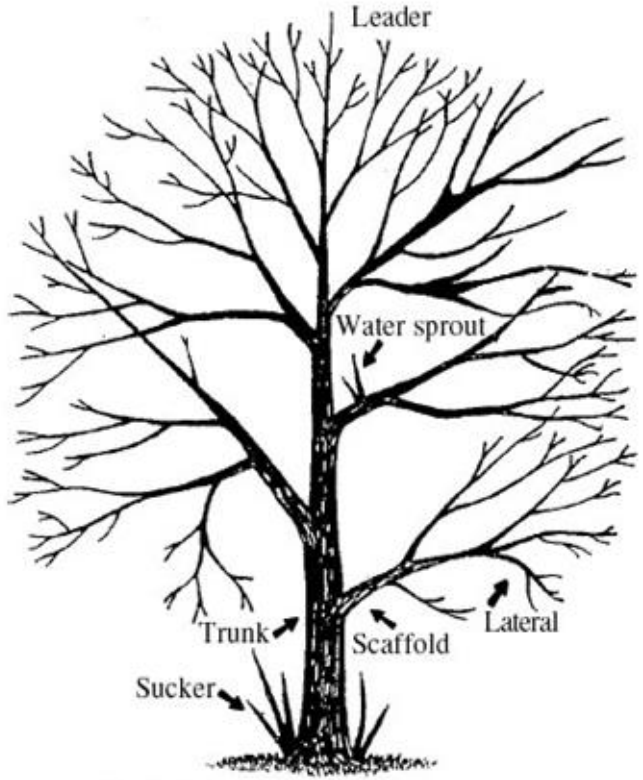

Typical above-ground tree framework

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Topping vs. Heading Back

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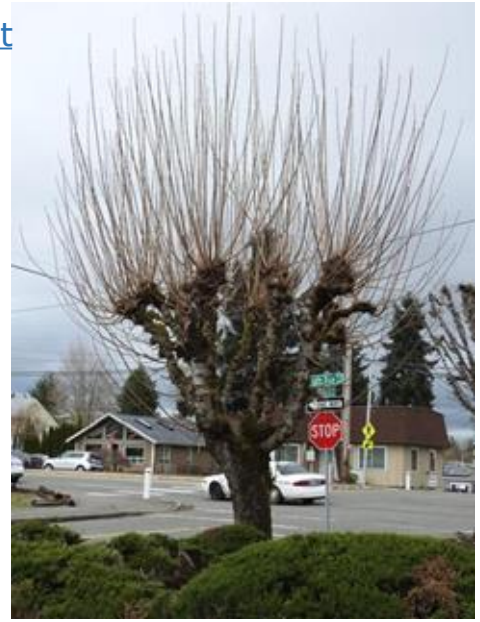


Topping is cutting straight across the branch. The large wounds are subject to decay. Water sprouts grow from the cuts but are poorly attached and may be a hazard

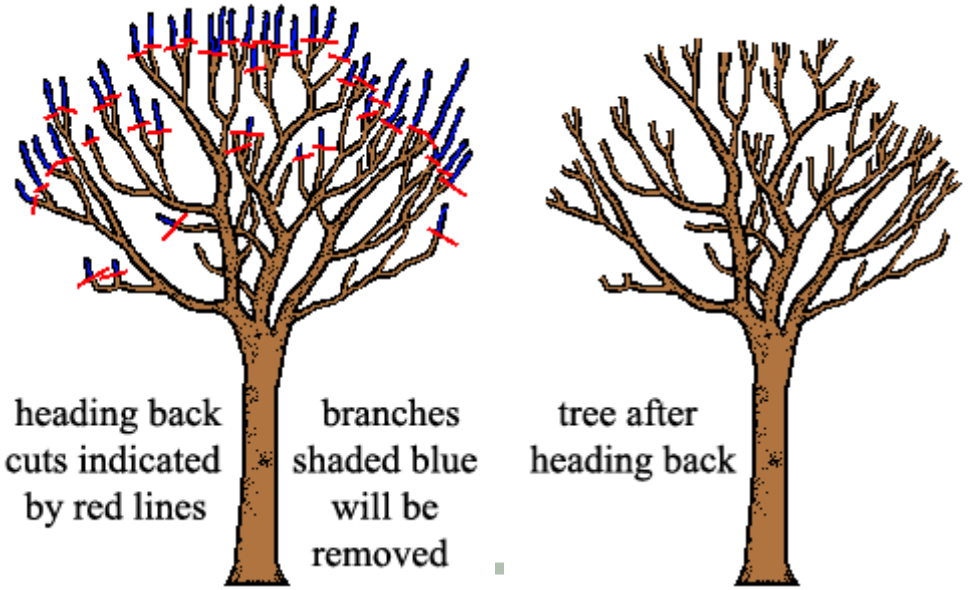
Heading Back

Proper Heading Back is the removal of branch tissue back to a lateral branch or bud.

Photo credit

The lateral is roughly 1/3 the size of Branch.

Pruning (download; slow to open)
Pruning Ornamental Plants



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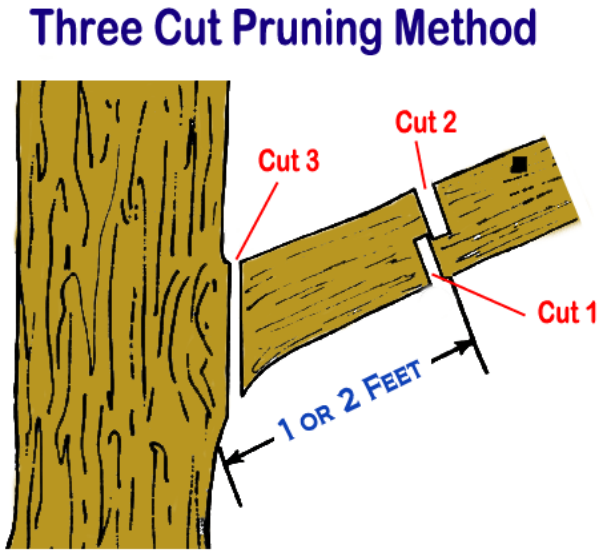
3-Point Cut (=Jump Cut)



Select the branch that you want to remove

Cut 1: should be 12 to 24 inches from the limb point of attachment and is an **undercut** made **1/2 way through the branch.**

Cut 2: the second pruning cut, should be made on the outside of the first cut (i.e., farther from the trunk) made **½ through the top of the branch**. This pruning cut is very important because it relieves weight from the branch collar and prevents accidental tearing of bark from the tree's trunk when the limb is removed.

Cut 3: Cut through the entire branch near the collar.

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[Follow Proper Pruning Techniques]

Shrub Renewal (Rejuvenation) Pruning

Renewal pruning is accomplished by removing the largest, oldest stems (generally 1/4 to 1/3 of the total stems) cutting between 1 to 3 inches from the ground.

This will stimulate new shoots to develop below the cuts which will fill in the plant creating a more dense and pleasing habit.

Renewal pruning should be done when the plant is dormant, late fall to early spring.



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Pruning Deciduous Shrubs

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Shearing shrubs

Shear to give a formal look when used as a hedge, or may be trimmed for a more natural appearance as shown here.



Over sheared azaleas
Photo credit

Cut back the most vigorous shoots inside the body of the plant where they meet another branch.

This type of pruning may be done lightly at anytime of the year, but heavy pruning is best done between early spring and Mid-July.



Shearing a long hedge may be necessary

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Pruning hedges

After the initial pruning, hedges need to be pruned often.

Once the hedge reaches the desired height, prune new growth back whenever it grows another 6 to 8 inches.

Prune to within 2 inches of the last pruning.

Hedges may be pruned twice a year, in spring and again in mid-summer, to keep them dense and attractive.

Prune hedges so they’re wider at the base than at the top, to allow all parts to receive sunlight and prevent legginess.

Pruning Overgrown Shrubs

Every year remove up to one-third of the oldest, thickest stems or trunks, taking them right down to the ground.

This will encourage the growth of new stems from the roots.

Once there are no longer any thick, overgrown trunks left, switch to standard pruning as needed.

Overgrown shrub: Photo credit



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Pruning Evergreens

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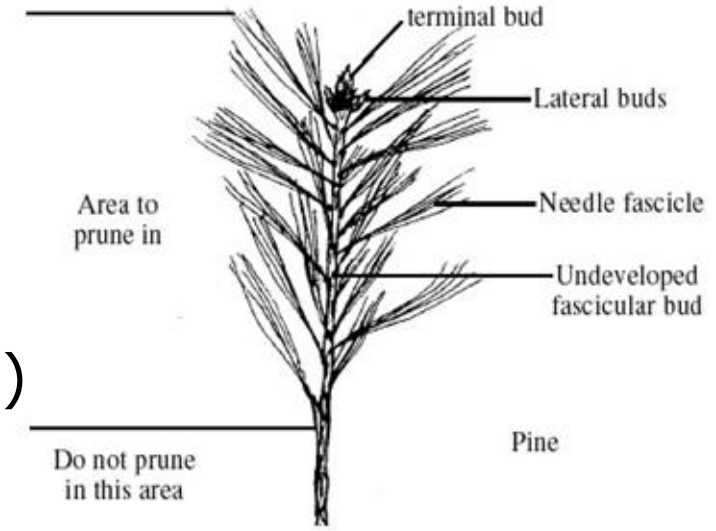

With few exceptions, evergreens (conifers) require little pruning.

Different types of evergreens should be pruned according to their varied growth habits.

Natural forms are often desired.

Pruning Evergreen Trees

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Pruning Evergreens

Spruces, firs and douglas-firs don’t grow continuously, but can be pruned any time because they have lateral (side) buds that will sprout if the terminal (tip) buds are removed.

It’s probably best to prune them in late winter, before growth begins. Some spring pruning, however, is not harmful.

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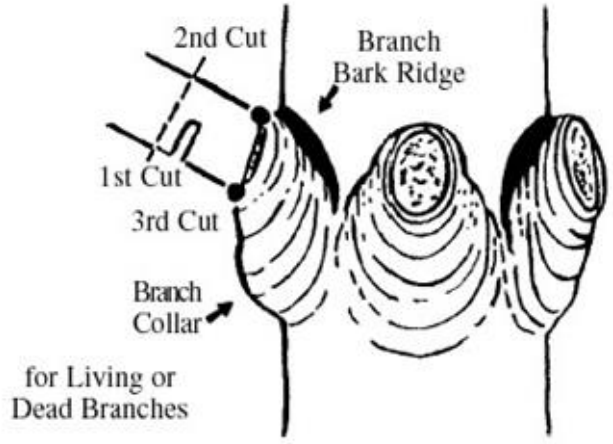

Branch bark ridge and branch collar on conifers

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Pruning Evergreens

Pines only put on a single flush of tip growth each spring and then stop growing.

Prune before these “candles” of new needles become mature.

Pines do not have lateral buds, so removing terminal buds will take away new growing points for that branch. Eventually, this will leave dead stubs.

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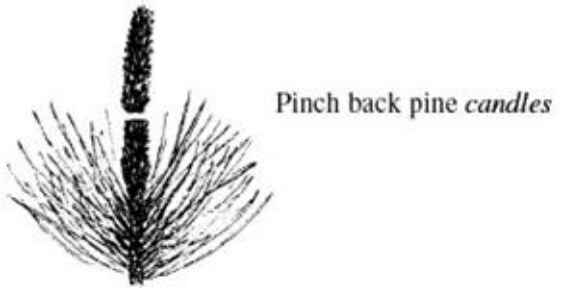

Pinch back pine *candles*

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Pruning Evergreens

Arborvitae, junipers, yews, and hemlocks grow continuously throughout the growing season.

They can be pruned any time through the middle of summer.

Even though these plants will tolerate heavy shearing, their natural form is usually most desirable, so prune only to correct growth defects.

Bud break is best from young, not old wood.

Photo credit





Branch arrangement of a whorl-branched conifer (Avoid pruning into the inactive center)

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Pruning Storm Damage

Usually a two-step process:

1. First aid: Remove only the branches necessary for immediate repairs; Too much in one season can create problems such as sunscald, weak branching and soft sucker growth. Bark can be reattached with galvanized nails

2. Follow up: check on progress of bark reattachment; gradually prune and reshape tree over a period of 3-5 years; control suckers or water sprouts, insects and disease

Plant Growth Regulators

Utilize chemical products to mimic naturally occurring plant hormones to control plant size

Paclobutrazol containing products are being used by utility arborists to slow the growth of trees near utility lines

Can be useful in helping trees overcome root injury

Pruning Summary

- Have a reason
- Best to prune when plant is dormant (note exceptions)
- Remove less than 25%
- Make cuts at branch collar
- Use correct tools, disinfect

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Watering

- Depending on soil type and weather conditions…
- 1” per week for trees
- Soaker hose, sprinkler
- Under drip line
- Very important on newly planted trees
- Reduces stress in all trees
- Can be minimized with mulch

Photo credit



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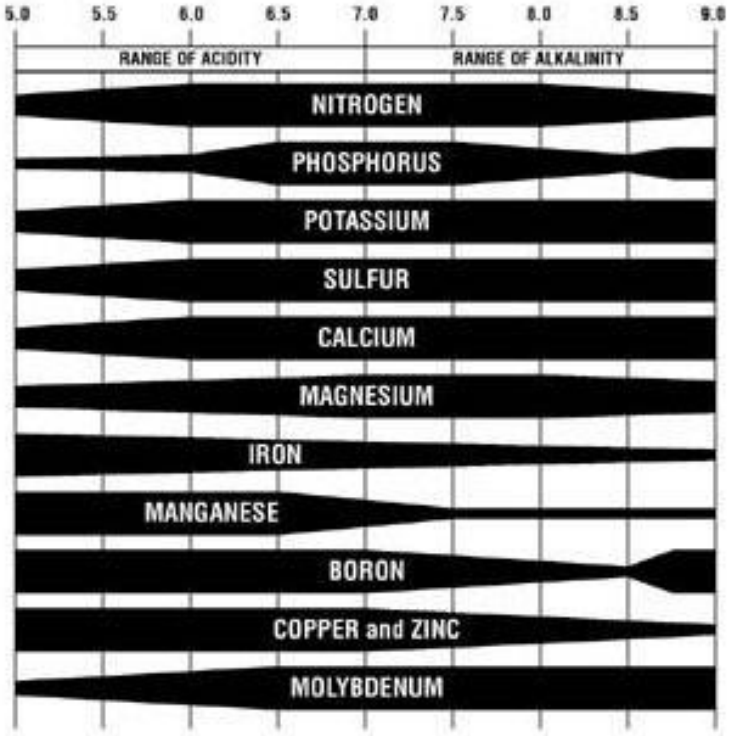
Fertilization

Photo credit



- Essential Elements
- Metabolism
- Necessary to complete life cycle
- May be limiting in urban landscapes
- Fertilization can:
  - Increase growth
  - Reduce susceptibility to disease and insects

Fertilizing Trees and Shrubs

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16 Essential Elements

Essential

Carbon (C), Oxygen (O), Hydrogen (H)

Macronutrients

Nitrogen (N), Phosphorus (P), Potassium (K)
Calcium (Ca), Magnesium (Mg), Sulfur (S)

Micronutrients

Boron (B), Chlorine (Cl), Copper (Cu), Iron (Fe),
Manganese (Mn), Molybdenum (Mo), Zinc (Zn)

Complete Fertilizer

Contains Nitrogen, Phosphorus, Potassium

(N-P-K) 10-6-4, 20-20-20

For trees, complete fertilizers are not always necessary

Inorganic Fertilizers

- Dissolve quickly in water
- 'Slow release'

Organic Fertilizers

- Manure, bone meal, compost, etc.
- Provides nutrients
- Improves soil structure

Timing for Fertilizing Trees

Spring and Fall best

Moisture content high in soil

Periods of active root growth



Photo credit

Rates for fertilization

Depends on:

- Vigor of tree
- Form of fertilizer
- Method of application

Generally, 2 to 4 lbs per 1000 feet square

Techniques

- Broadcast
- Drill hole / liquid injection
- Foliar (for minor deficiencies)

Photo credit



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Fertilization Summary

Fertilize only if there is a deficiency

If you fertilize your lawn, you may not need to fertilize your tree

Best to fertilize in fall or early spring

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DISEASES OF WOODY ORNAMENTALS

Root / Crown Rots

The pathogen *Phytophthora* kills plants by growing from the roots up through the root crown and into the lower trunk, where it kills the inner bark and causes a browning of the outer layer of sapwood.

Symptoms:

- Leaves appear drought stressed; turn dull green or yellow
- Darkened areas in bark

Environmental triggers

- High soil moisture
- Cool soil temperatures

Control:

Moderate soil moisture

- Grow woody ornamentals in well-drained sites
- Use a soil with adequate drainage
- Add organic matter to improve drainage
- Use raised beds

Root and Crown Rots:
Photo credit



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Dutch Elm Disease



Leaves on infected branches turn yellow, wilt and then turn brown.
Photo credit

Cause: fungus

Symptoms: wilting and/or yellowing of the leaves (flagging)

- Environmental trigger: Cool, wet conditions
- Transmission
  - Elm bark beetles
  - Root grafts

  (This is the major method of movement in clumps of elms)

Fungus is present in the streaked wood, and isolations taken from this symptomatic tissue are needed to confirm infection.

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Dutch Elm Disease

Control:

- Sanitation
- Control vectors (beetles)
- Prune diseased branches
- Remove root grafts
- Plant resistant varieties
- Use fungicides injections:
  - Propiconazole, thiabendazole
  - Prophylactic or therapeutic

Oak Wilt



Oak wilt spore mat and pressure pad. Photo credit



Wilting oak leaves with early onset of the disease. Photo credit

Cause: Fungal disease

Oak wilt spore mats emit a strong fruity or wine-like odor that attracts many different species of **nitidulid beetles**, also known as sap beetles, which accumulate spores on their bodies.

Identify, Prevent and Control Oak Wilt
Good pics of disease cycle, spore mat, and Nitidulid beetles that spread oak wilt

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Oak Wilt

Symptoms

- Oak wilt disease symptoms progress differently in red oaks, white oaks, and Texas live oak
- Red oaks have rapid leaf discoloration and wilting
- White oaks usually die slowly, one branch at a time

Oak Wilt

Control

- Early detection and prompt removal of dead or dying trees and breaking root grafts between diseased and healthy trees are essential
- Mechanical and chemical barriers between diseased and healthy trees can halt the spread of the oak wilt fungus through root grafts
- Remove diseased (and healthy) trees

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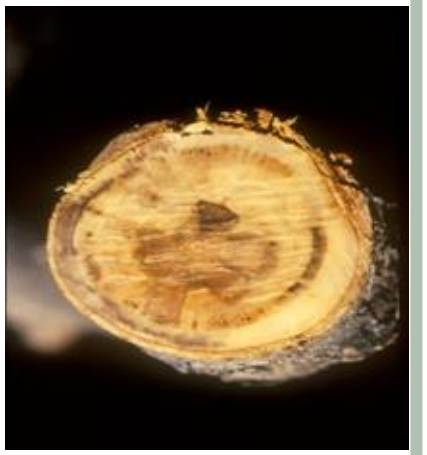
Verticillium Wilt

V. wilt on Norway maple, 18” stick showing discoloration



Cause: soil born fungus

Verticillium invades the root system directly or through wounds caused naturally by root growth through the soil or soil organisms

Chronic symptoms: small, yellow foliage, leaf scorch (marginal browning), slow growth, abnormally

heavy seed crops and dieback of shoots and branches

Acute symptoms: leaf curling, drying, an abnormal red or yellow color of leaves or areas between leaf veins, partial defoliation, wilting and branch dieback

Wilting branch on young Maple with V. wilt



Verticillium Wilt. Photo credit

Verticillium inoculated Ailanthus on right; control on left



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Verticillium Wilt

Hosts: Many woody ornamentals; herbaceous plants, Maple, ash, redbud, smoke bush

Environmental trigger: Cool, wet weather

Control

- Lab test needed to confirm
- Fumigate heavily infested soils
- Proper water management
- Fungicides will not cure the disease
- Use resistant plants
- Prevent plant stress

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Chlorosis

An abiotic problem

Cause:

Micronutrient (Fe or Mn) deficiency

Cultural:

- Overwatering is probably the most common cause
- Root damage

Symptoms: greenish-yellow to yellow leaves

Problem trees: Oaks, Red Maple

Other woody plants can also be affected

Environmental trigger: High soil pH



Pin oak before and after treatment with ferric ammonium citrate. Photo credit

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Iron Chlorosis in Trees

Chlorosis

Treatment (depends on cause):

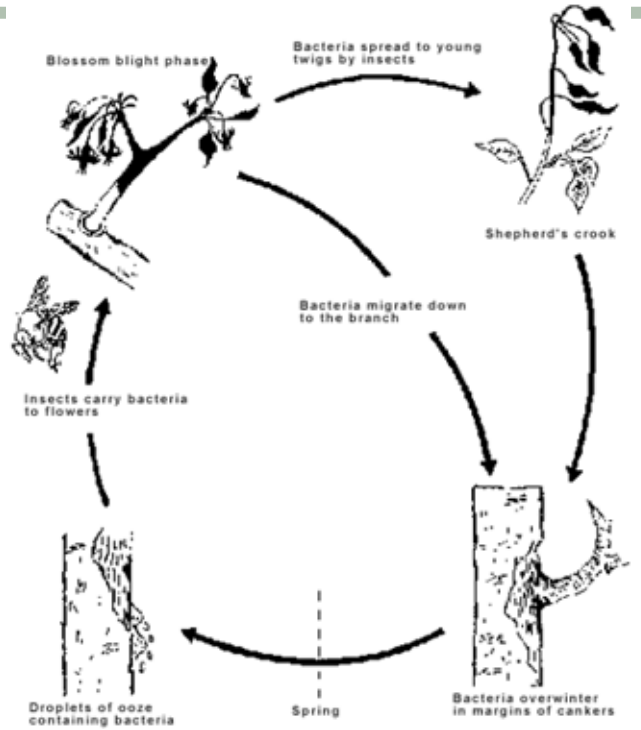
- Monitor soil pH and soil nutrients
- Decrease pH using sulfur or aluminum sulfate
- Add chelated Fe and/or Mn as needed
- Make sure trees are adequately watered
- Minimize damage to trees' root systems
- Monitor water

Fire Blight

Cause: Bacteria

Hosts:

- Many rosaceous plants
- Apple, crabapple, pear, mountain ash, cotoneaster
- Symptoms: watery, light tan bacterial ooze that exudes from branch, twig, or trunk cankers; flowers, shoots, and/or young fruit shrivel and blacken. Small shoots wilt, forming a crook at the end; scorched appearance.
- Influenced by seasonal weather
- Environmental trigger: Hail



Above: life cycle

Below: Blighted leaves



Fireblight Photo credit

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Fire Blight

Control

- Excess nitrogen fertilization and heavy pruning, which promote heavy growth, should be avoided.
- Trees should not be irrigated during bloom
- Plant resistant varieties where available
- Prune diseased branches
- Chemical control not recommended

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Fireblight

Black Knot



Photo credit

Symptoms:

thick, black, irregular swellings; warty, black galls which may vary in size from 1/2 inch to more that 1 foot in length. Infection stresses the entire tree

Hosts: Prunus species, Plums, Cherries

Prevent / Treat:

- Plant resistant varieties
- Remove volunteer plums/cherries
- Prune diseased branches
- Fungicides not recommended for home gardens



Black Knot

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Anthracnose

Cause: Fungal disease: Occurs after unusually cool, wet weather during bud break

Hosts: many shade trees

Symptoms:

- Killing of buds, which stimulates the development of many short twigs or "witches' brooms;" girdling and killing of small twigs, leaves, and branches
- Repeated early loss of leaves, which over several successive years weakens the tree and predisposes it to borer attack and winter injury

Control

- Remove diseased leaves
- Sanitation
- Use fungicides
  - Copper-containing fungicides (mancozeb)

Maple anthracnose
Photo Credit



Oak Anthracnose
Photo Credit



Anthracnose on Shade Trees

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Tubakia (Actinopelte) Leaf Spot



Leaf Spot on Oak.
Photo credit

Late-season fungal disease of oaks

Symptoms:

- Small to large dark brown or reddish-brown spots or blotches; premature defoliation may occur; adverse affects on the health of trees are minimal

Environmental trigger: Hot, wet late summer weather

Control:

Fungicide sprays are not recommended. Maintain good tree vigor by watering during drought stress periods and fertilizing trees appropriately

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Scab



Cause: Fungal Disease of apples, peach, nectarine, pears

Symptoms:

Small olive to brownish and velvety feeling spots on the fruit; deformed fruits crack; twigs die

Scab on Apple

Photo credit

Control:

- Plant/produce resistant varieties
- Remove and destroy infested leaf & fruit debris
- Thin trees to promote air flow
- Use fungicides to prevent infections



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Black Spot

Cause: Fungal disease

Symptoms: black spots especially on the upper leaf surface

Host: Rose

Environmental trigger: Long periods of leaf wetness

Control:

- Plant/produce resistant rose varieties
- Sanitation
- Avoid wetting foliage
- Avoid overcrowding
- Prune rose shrubs to remove diseased canes and open the plant canopy
- Fungicides; Neem oil



Black spot on rose
Photo credit

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Insect Pests of Woody Ornamentals and Shrubs

Utah State University website has a great document describing 'Top Ten Insect Pests of Woody Ornamentals'. While Utah does not have the same growing environment as Virginia, many of the pests are the same. This publication describes the insect, its hosts, symptoms & signs, and remedies for the problem. The pictures are great.

Scales, aphids, cankerworms, spider mites, ash / lilac borer, flat-headed and round-headed borers, bark beetles, gall-forming insects, and lilac root weevil

Top Ten Insect Pests of Woody Ornamentals

See PMG for Treatments

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Trees and Shrubs Common to the Area

Your textbook describes many trees and shrubs that will grow well in Virginia, including some unusual or uncommon trees.

Remembering that Virginia tends to have acid soil, it will be easier to choose a tree or shrub that loves acid soil rather than to change the soil to suit a tree that doesn't grow well in acid soil.

Guidelines for Winterizing Trees and Shrubs

Three categories of winter damage:

- Desiccation: dying out (dry fall; severe freeze in winter; frost heaving; strong winds)
  - Discolored, burned needles or leaves; heaved roots; dead branch tips;
  - Prevent/treat: proper watering; mulch; windbreaks for small trees / shrubs
- Freezing: (fall fertilization; snow, ice, wind
  - Put off fall fertilization until dormant; protect young trees from wind; proper pruning
- Breakage (snow, ice, wind)
  - Proper pruning; protect from wind, snow, ice

Rodent damage can also be significant in winter. Poisons, traps and exclusions (e.g. fences for rabbits), tree wraps, repellent washes

Select hardy plants and an appropriate protected site

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Factors Affecting Hardiness

- Environmental
  - Soil
  - Terrain / slope
  - Moisture / drainage (wet soil holds heat)
  - Sun/Shade patterns
  - Wind path
- Fertility: high fertility reduces plant acclimation
- Physiological Damage: reduces plant acclimation

Root hardiness is the most important factor affecting the winter survival of container-grown ornamentals. An article by Rutgers University provides a table with root hardiness for several specific woody ornamentals.

Management of Nursery Container Plant Material During Cold Weather

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Protecting Trees During Construction

- Compaction
- Damage to roots (some trees do not adapt well to the changes); must preserve at least 50% of roots to retain health of tree;
- Lack of water during construction
- Direct tree injury: bark removal, branch breakage, surface grading, trenching injury
- Piling up soil around trunk base



Photo credit



Protecting Trees During Construction

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Vines

- Vines need support, training and pruning
- Use with care if climbing a building – can erode masonry and provide a wet environment for wood rot
- Pinching back terminal buds promotes more uniform distribution of foliage

Climbers and Twiners: Vines for the Home Garden

Groundcovers



Photo credit

Low mat-forming or trailing plants other than turfgrass

Benefits:

- Control erosion
- Obstructing traffic without impeding view
- Conserving soil moisture
- Reducing lawn maintenance
- Filling odd shaped areas
- Providing vegetative growth where grass is difficult to maintain

Groundcovers to know and use

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End of Slide Set

You can continue to next slide: 'Suggested Readings'

OR

Click on the house below to return to the Navigation Page

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Suggested Reading

Note: : While there are many websites outside of our Virginia Cooperative Extension resources that have good information, that information may not be applicable for your geographic area.. This is especially true regarding the life cycle and treatment times for insects.

- Powdery Mildew of Ornamental Plants (2 pages)
- Trees, Shrubs and Groundcovers (multiple articles)
- Dogwood Diseases and Insect Pests
- Focus on Plant Problems (multiple links to other pages of plant problems)
- A Guide to Successful Pruning: Shrub Pruning Calender (3 pages)
- Tree Pruning Guide (multiple links to others)

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Tests of Knowledge

Planting Trees

Help Desk Quiz

Apply What You Have Learned

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Apply What You Have Learned

1. Take 'before' and 'after' pictures of a shrub you pruned; Describe what you did.
2. Take a picture of a shrub on your property that needs pruning; write out your suggestions of what and how to prune.

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Click this box to return to the Tests of Knowledge Page

What do you Know About Planting Trees?

Answers on next slide

1. Which of the following suggests that a tree has been planted too deep?
    a. Roots growing in the upper 6-8 inches of soil
    b. Trunk enters the ground flush
    c. Root flare even or higher than the natural soil grade
2. When planting a new tree, the hole should be backfilled with:
    a. Soil native to the site
    b. Amended soil
    c. High organic soil
3. A benefit of planting a 'ball and burlapped' tree is:
    a. They are less expensive than bareroot trees
    b. They are more resistant of disease than bareroot trees
    c. They are usually larger than bareroot trees
4. A tree that is planted too deeply is susceptible to death from:
    a. Suffocation
    b. Fungal disorders
    c. Water logging
5. Newly planted trees should be fertilized:
    a. Heavily
    b. Lightly
    c. Not at all initially

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Help Desk Quiz Answers on next slide

1. Bamboo Nandina, aka "heavenly bamboo" past 2 yrs. have aborted flowers & not set berries. Prior to this did set berries. This plant is in full sun. Another one on opposite side of house in partial shade is setting berries every year.
2. Cherry tree . Bark is splitting.
3. I want to buy several large rhododendrons for my garden. Which is best: balled and burlapped (B&B) or container grown?
4. Should I put mulch around my newly planted roses and shrubs?

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Help Desk Quiz

1. Bamboo Nandina, aka "heavenly bamboo" past 2 yrs. have aborted flowers & not set berries. Prior to this did set berries. This plant is in full sun. Another one on opposite side of house in partial shade is setting berries every year.

Answer: Check soil acidity; plant must have soil pH range of 3.7 to 6.4. Protect from harsh winds; plant will suffer damage at temperatures near zero. Prefers partial shade to full sun. Nandina, Heavenly Bamboo

2. Cherry tree . Bark is splitting.

Answer: Weeping cherry - Bark splitting on cherry usually related to fluctuating growth conditions; sunscald in winter. Kwanzan cherries are most susceptible.-trace bark that is split and cut out. Do not paint or seal wound.

3. I want to buy several large rhododendrons for my garden. Which is best: balled and burlapped (B&B) or container grown?

Answer: Balled and burlapped plants are preferred for large evergreen plants. Plants grown for a long time in a container may mat on the outside of the rootball and roots may have circled the container, causing strangulation or girdling

4. Should I put mulch around my newly planted roses and shrubs?

Answer: Mulch is helpful to conserve moisture and help suppress growth of weeds and grass and may make it easier to mow. However, limit the mulch to 2-3 inches deep and use shredded pine bark or wood chips. Mice can tunnel more easily in coarse materials like straw or pine needles. Keep the mulch back about 6 inches from the stems.

Help Desk Quiz continued

5. There are spots on the leaves of my holly tree; large portions of the tree have turned brown.

6. Something is eating at the trunk of my oak tree and leaving holes in the bark.

7. What is the best time to prune lilacs and azaleas?

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Help Desk Quiz continued

5. There are spots on the leaves of my holly tree; large portions of the tree have turned brown.

Answer: fungi causes spots on leaves. Rarely harmful to tree. Spreads by splashing water and wind. Increases with moisture. Remove infected leaves and destroy. Spray with a fungicide that contains Ferban. Repeat every 2 weeks as long as weather if favorable for the disease. If tree is receiving to much water, may consider moving it to another location.

6. Something is eating at the trunk of my oak tree and leaving holes in the bark.

Answer Probably oak borers. Spray with lindane or methoxychlor. Use wire or pick to crush borers in holes.

7. What is the best time to prune lilacs and azaleas?

Answer: These shrubs need little pruning. If they need it, do this soon after they finish blooming, but not later than July to prevent cutting off next year's bloom.

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