



What is Pruning?

Selective removal of plant parts to reduce size, improve appearance, remove unsightly or diseased branches, and encourage growth and flowering

Why Prune?

- Maintain plant health and vigor by removing diseased or dead tissue.
- Thinning - Increase sunlight penetration, reduce crowding or rubbing branches
- Stimulate flowering and fruiting (dead-heading)
- Train plant into desired shape
- Stimulate lateral growth, filling of canopy
- Avoid interferences

Pruning Tools

- Always use sharp and clean tools for pruning. Sharpness makes cleaner cuts that are healed more easily
- Use the appropriate tool : Hand clippers, loppers, saws, and shears
- Gloves, safety glasses, sturdy protective shoes

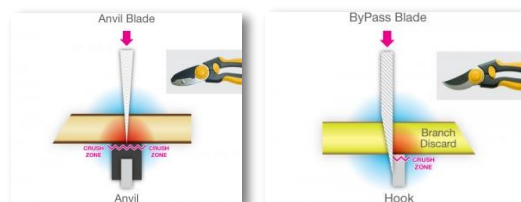


Hand-Clippers

- Most frequently used tool
- Small diameter ($\leq 1/2"$) branches
- Anvil
- Bypass – give clean cuts on new growth and hollow stems
- Choose stainless steel to reduce corrosion and comfortable hand grips
- Other helpful features – colorful handles, locking mechanism
- Corona, Felco, ARS, DRAMM



The Problem with Anvil Pruners



Anvil pruners are better for cutting up dead and removed wood

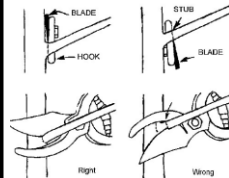
Photos: <http://www.gardenmyths.com/anvil-bypass-secatuers-pruners/>

Loppers

- Larger diameter cuts (larger than ½ inch)
- Varying lengths
- Are usually bypass



Proper Blade Positioning



How to position pruning shears

Photo: <http://www.gardenmyths.com/anvil-bypass-secaturs-pruners/>



Pruning Saws

- For much larger limbs (1.5 inches or thicker)
- Curved blade
- Choose one that folds closed for safety
- Pay attention to hand positioning in case of a slip



Hedge Shears

- For hedging and shaving many small diameter branches
- Do not use for larger diameter cuts
 - Larger branches should never be topped, but selectively pruned
- If branches are too thick to hedge, selectively prune instead, or use power hedgers.
- Shears are not used to give a natural look



Take Note of Bud Arrangement

Opposite



Alternate



Effects of Pruning

- Auxin – a plant hormone produced in the terminal buds of shoots
 - Auxin is responsible for apical dominance and a tall slender habit
 - Reduces lateral bud break, and therefore lateral shoot growth.
 - Removal of terminal bud increases lateral bud break and stimulates lateral branching, causing a "filling" effect. Also responsible for increasing water sprouts.

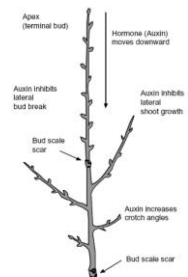


Figure 2. Apical dominance is influenced by auxin
Photo Courtesy: source 4.

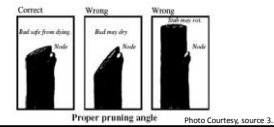
Effects of Pruning

- Removal of branch tip will stimulate lateral growth in the same branch below the cut.
- If a shoot or branch is directly below the cut, growth will favor elongation of that shoot



Types of Cuts

- Heading Cuts
 - Purpose is to shorten
 - Make these cuts as close to the bud as possible
 - Stimulates growth near the cut
 - The direction of nearest bud will be the new direction of growth
 - Remove inward-facing buds on oppositely arranged plants



Types of Cuts

- Thinning Cuts
 - Purpose is to reduce foliage density
 - Branches are removed at their points of attachment.
 - Maintains apical dominance
 - Does not result in as big of a flush of regrowth, maintains natural habit
 - Can be used to improve sunlight penetration deeper into canopy



Photo Courtesy, source 7



Vs.



Types of Cuts

- Shearing
 - The process of "shaving" foliage to a uniform height or desired shape.
 - Stimulates regrowth at the surface of the shrub canopy.
 - Choose a shape that won't block sunlight to lower branches
 - Once started, shearing process must be maintained

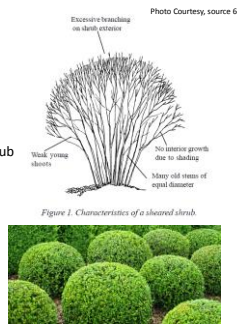


Photo Courtesy, source 6.

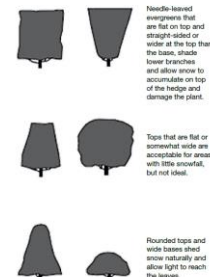


Photo Courtesy, source 4.



Renewal Pruning

- Cutting back the plant to the ground, removing all above-ground branches to a few inches from the ground
- Can be used to eliminate severely damaged branches due to weather or disease
- Can be used to remove overgrown plants
- Reduce pesticide use
- Should be done late winter/very early spring
- Summer blooming plants will likely rebloom that year
- Do not perform on grafted plants
- Abelia, Butterfly bush, Beautyberry, Smoke tree, Forsythia, Fothergilla, Hydrangea, Weigela
- Coppicing – renewal pruning in the fall. Rhododendron, azalea, pieris, mountain laurel.

Make Smallest Cuts Possible

- Make straight cuts so as to minimize the wound area.
- Slanted cuts increased wounded area and allow exposure to more disease pathogens.

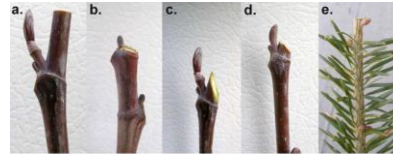


Figure 5. Proper pruning cuts: a.) too far from bud, b.) too close to bud, c.) too slanting, d.) good cut, e.) good cut (slanted). Photo Courtesy, source 4.

Wounds

- Every cut made to a living plant is an entryway for pathogens
- Make the smallest cut possible, and only remove foliage that is absolutely necessary.
- The plant's response to wounding is to form a layer of hardened cells at the cut site to protect the inner vascular tissues from exposure.
- This happens at the branch collar.

Preserve the Branch Collar

- The branch collar is the base of the branch where it attaches to the parent trunk.
- An area of swollen, thickened tissue, which supports the weight of the branch.
- Is composed of hardened tissue that is decay-resistant and resists spread of disease into the parent tissues.
- Always cut just beyond the branch collar, mimicking natural branch loss

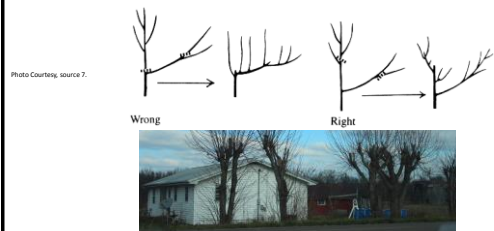


Do not injure the branch collar when pruning



When removing larger limbs, use this series of three cuts to reduce bark stripping and exposure of inner wood.

Avoid Dramatically Removing Central Leader



New Central Leader

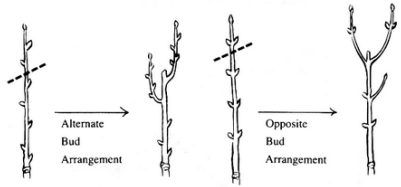


Figure 4. Pruning stimulates lateral shoot growth close to the cut.

Start pruning to train early in the tree's life

Photo Courtesy: source 7

When Should We Prune?

Generally, either late winter/early spring, or early summer

Depends on whether the plant blooms on last year's wood or new growth

Timing – Flowering Trees and Shrubs

- Early blooming plants, bloom on last year's wood
 - Prune in late spring or early summer, *after* flowering
 - Early summer pruning stimulates growth that will bloom next year. So don't delay.
- Azalea, barberry, euonymus, deutzia, dogwood, forsythia, hydrangea (bigleaf, oakleaf), lilac, loropetalum, quince, rhododendron, spirea, sweetshrub, weigela, and witchhazel.



Timing – Flowering Trees and Shrubs

- Later Bloomers (bloom on new growth)
 - Prune during late winter / early spring *before* bud break
 - Pruning stimulates growth that will bloom the same year
- Abelia, beautyberry, butterfly bush, clethra, crape myrtle, hydrangea (smooth and panicle), itea, rose, rose of Sharon, spirea.



Timing – Flowering Trees and Shrubs

- Avoid late summer and early fall
 - The stimulated growth will not mature before winter
- After fruit has lost beauty – holly, pyracantha, barberry, cotoneaster, nandina

Timing for Conifers

- Generally, any time the wood is not frozen.
- Pruning stimulates the foliage near the cut, can be done to thicken growth
 - Ex. Christmas tree shearing
- Older wood has fewer buds for regeneration – foliage thickening less likely



Pruning Conifers

- Example: Arborvitae, Juniper, Cotoneaster, Chamaecyparis, Yew.
- Pruning is rarely necessary but can be used to remove old branches near the bottom and maintain compact shape
- Any desired pruning should be done during winter or spring
- Avoid cutting into old wood with no green foliage. Regrowth not likely.

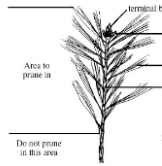


Photo Courtesy, source 2.

Pruning Conifers

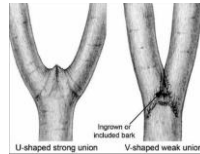
- Example: Pines, Spruces, Firs
- New growth appears as "candles"
- Prune by pinching or cutting up to half the candle in early summer



Photo Courtesy, source 8.

Training

- Pruning to train trees should begin early, within the first 2 years of planting.
- Minimizes wounding due to removal of smaller branches
- Allows plant to better adjust to desired shape, avoiding crooked or lopsided forms
- Pruning early also avoids unstable or weak forms to mature



Considerations

- Some pruning may take place during active disease periods
- Pruning can be done to remove diseased and dead tissue
 - Disease inoculum can be carried between plants and spread infection
- Practice good sanitation and minimize unnecessary wounding

Sanitation

- Inoculum can be harbored on the tool surface or in the organic matter stuck to the tools
- Proper sanitation involves thoroughly cleaning any debris from the surface of the tools before using sanitizing agent.
- Use stiff plastic brush, not metal, to safely clean tools
- Tools should be clean and sanitized before each use
- Tools should be regularly cleaned and sanitized during pruning activity
- Do not allow debris to remain on tools after finished pruning – clean before storing

Sanitizing Agents

- Quaternary ammonium (such as GreenShield®) follow label directions
- Alcohol solution (isopropyl or ethanol) (50% solution) (CORROSIVE)
- Chlorine bleach (25%) solution (CORROSIVE)
- Household cleaners may also be used, but can be corrosive as well. Read the labels.

Adapted from
<http://baker.ifas.ufl.edu/Horticulture/documents/DisinfectingPruningTools.pdf>

Sanitation Tips

- Diseases are more easily spread under wet conditions – prune during dry periods
- Disease inoculum can also easily be carried on your hands and clothing, so minimize contact with infected branches.
- Save plants that are known to be infected for pruning after all other plants have been pruned.

Sanitation Tips

- Sanitizing between each plant may be time-consuming and impractical, but can greatly reduce disease spread
 - At minimum, sanitize between all known-infected plants.
- Clean up all removed branches and plant litter – disease inoculum can over winter and spread from dead material.

Pruning Sanitation



Southern Risk Management Education Center, the University of Tennessee Institute of Agriculture, and the UT Department of Plant Sciences. Narrated by Ms. Haylee Jones, produced by Ms. Hailee Jones and Dr. Diana Cochran with assistance from Dr. Amy Fulcher.
<https://www.youtube.com/watch?v=CHrRPh3lqIk>

Caring for your pruning tools

- Only use pruning tools for pruning plant material
- Use the right tool for the right diameter branch
- Always clean your tools
- Apply light oil to keep blades clean and joints lubricated
- Store in safe place away from moisture



Last Thoughts

- Preserve the plant's natural form as much as possible
- Begin training form early in the plant's life
- Avoid heavy pruning (>10-15%) in very young trees
 - Reduces root growth
- Early spring flowering shrubs should be pruned after flowering
- Late summer flowering shrubs should be pruned late winter
 - Does the plant flower on old or new wood?
- Remove dead branches and spent flowers any time
- Practice proper safety techniques and maintain proper sanitation

Recommended Reading

- Blog: *What Grows There*, by Hugh Conlon, retired ornamental specialist.
<http://www.whatgrowsthere.com/grow/>
- *Best Management Practices for Pruning Landscape Trees, Shrubs, and Groundcovers*. PB1619, available on UT Publications Website.
<https://extension.tennessee.edu/publications/Pages/default.aspx>



Questions or Comments?

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Thank You!

Resources Used

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4. Klingeman, B., Campbell, A., and Maxey, R. *Best Management Practices for Pruning Landscape Trees, Shrubs, and Groundcovers*. UT Extension Publication PB1619.
5. Lamborn, A.R. *Disinfecting Pruning Tools*. University of Florida, Baker County Extension. <http://baker.ifas.ufl.edu/horticulture/documents/DisinfectingPruningTools.pdf>
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