Virginia Cooperative Extension

PUBLICATION 430-459

A Guide to Successful Pruning

Pruning Shrubs

Susan C. French, Extension Technician
Bonnie Lee Appleton, Extension Horticulturist

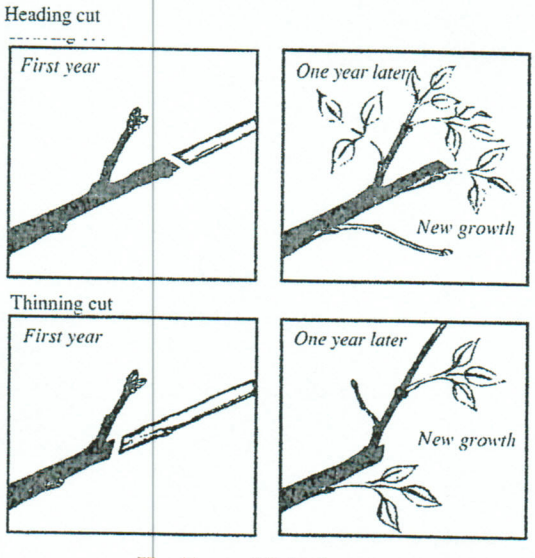
Growth Habit

Understanding the **natural "habit"** or **shape** of shrubs will help you determine how to prune them. All shoots grow outward from their tips. Whenever tips are removed, lower buds are stimulated to grow. Buds are located at nodes, where leaves are attached to twigs and branches. Each node produces from one to three buds, depending on shrub species.

Shrubs have **mounding**, **cane**, or **tree-like** growth habits. Those with mounding habits, such as evergreen azalea and spirea, generally have soft, flexible stems, small leaves, and are often used in mass plantings.

Shrubs with cane habits include forsythia and nandina. These shrubs spread by sending up erect new branches, called canes, from their base.

Tree-like shrubs have woodier, finely divided branches. Witch hazel and rhododendron are examples of shrubs with tree-like habits.

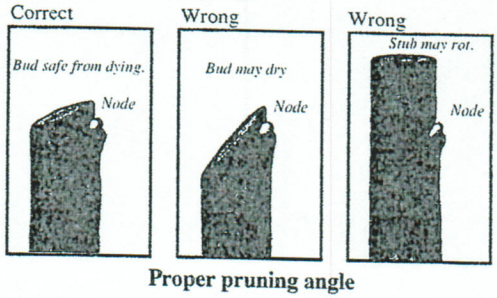


Heading and thinning cuts
Heading and thinning cuts have different effects on subsequent growth.

How to Prune

There are two basic types of pruning cuts: heading cuts, and thinning cuts. Heading cuts stimulate growth of buds closest to the wound. The direction in which the top remaining bud is pointing will determine the direction of new growth. Make heading cuts selectively to reduce shrub height and retain natural form. Non-selective heading cuts made indiscriminately will stimulate rapid regrowth from buds below the cut. These vigorous shoots are unattractive and make shrubs bushier, but not smaller. Non- selective heading cuts are only justifiable when using hedge clippers on a hedge or topiaried shrub.

Thinning cuts remove branches at their points of origin or attachment. Used in moderation, thinning cuts reduce shrub density without stimulating regrowth.



Proper pruning angle

Make pruning cuts correctly. For heading cuts, prune 1/4 inch above the bud, sloping down and away from it. Avoid cutting too close, or steep, or the bud may die. When pruning above a node with two or more buds, remove the inward-facing ones. Make thinning cuts just above parent or side branches and roughly parallel to them.

Don't coat pruning cuts on shrubs with paint or wound dressing. These materials won't prevent decay or promote wound closure.

Maintenance Pruning

Deciduous shrubs require maintenance pruning to keep them healthy and in scale with their surroundings. Maintenance

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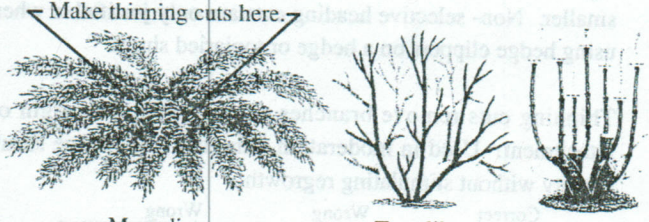
pruning practices should begin at the time of planting, or after rejuvenation of older shrubs.

Always remove dead, diseased, or broken branches promptly. When pruning dead or diseased branches, make thinning cuts into healthy wood, well below the affected area. Disinfect tools between each cut with products such as "Lysol," "Listerine," or rubbing alcohol. Tests have shown that "Pine-Sol" and household bleach are highly corrosive to metal tools.

To reduce the height of shrubs with a cane habit, first remove the tallest canes by cutting or sawing them out near ground level. Then, thin out any canes crowding the center, as well as those growing in an unwanted or unruly direction.

For height maintenance of mounding-type shrubs, prune only the longest branches. Make thinning cuts well inside the shrub mass where they won't be visible. This method reduces mounding shrubs by up to one-third their size without sacrificing their shape.



Mounding Tree-like Cane

Shrubs with a tree-like habit are the most difficult to shorten. After removing any rubbing branches, prune to open up the center of the shrub. Keep the crown open and maximize light penetration by careful use of thinning cuts. Prune branches that touch the ground and suckers originating from the roots. Wait until the very end of the job to make any heading cuts. Tree-like shrubs can usually tolerate removal of one-eighth to one-fourth of their branches.

Rejuvenation Pruning

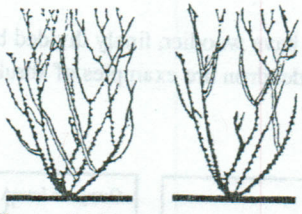
Older shrubs often grow out of proportion with their surroundings, and may have large amounts of unproductive wood. Two techniques are used to restore old shrubs, provided they still have sufficient vigor and are growing in a favorable location. Keep the following in mind with rejuvenation pruning:

1) **Select an appropriate species.** Not all shrubs respond well to drastic pruning.
2) **Observe proper timing**. The preferred time for renovative pruning is just before bud break in early spring.
3) **Give extra care to heavily pruned shrubs.** Fertilization, watering, and pest control will be critical factors.
4) **Consider the shrub's new appearance.** What will be the immediate impact on the landscape?

Extensive rejuvenation

The first technique involves complete removal of the entire plant 6-10 inches above the ground. Use heavy lopping shears and a pruning saw. Remove half of the new canes that develop by mid- summer, and head back some of the remaining canes. When using a heading cut, be sure to prune to outward-pointing buds so that the inner portion does not become too dense. Shrubs that tolerate extensive rejuvenation are: abelia, dogwood, honeysuckle, hydrangea, lilac, mallow, rose-of-Sharon, spirea, and St. John's wort (hypericum).

The second technique for shrub rejuvenation removes growth more gradually. The first year, remove one-third of the oldest, unproductive branches. The next year, take one-half of the old, lingering stems. Finally, in the third year, prune out the remainder of the old branches. New, productive stems should quickly replace the old wood. This method takes longer to complete, but the shrub stays more attractive throughout the rejuvenation period.



Unpruned shrub Gradual rejuvenation

When to Prune

Pruning at different seasons triggers different responses. Late winter or early spring, before bud break, is usually the best time to prune many species because new tissue forms rapidly. However, pruning should be delayed for most spring-blooming shrubs until immediately after flowering to avoid reducing the floral display.

Summer pruning tends to suppress growth of both suckers and foliage. Summer-blooming shrubs should be pruned in early spring prior to bud set, or in summer immediately following flowering.

Late summer or early fall pruning causes vigorous regrowth, which in some cases may not harden off by winter, leading to possible cold damage. Whenever unexpected damage from vandalism or bad weather occurs, prune at once.

(See VCE Publication 430-462, *Shrub Pruning Calendar*)

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PUBLICATION 430-458

A Guide to Successful Pruning

Stop Topping Trees

Susan C. French, Extension Technician
Bonnie Lee Appleton, Extension Horticulturist

What is "topping"?

Topping occurs when the vertical stem (**leader**) and upper primary limbs (**scaffold branches**) on mature trees are cut back to stubs at uniform height. Topping is also referred to as heading, stubbing, or dehorning.

How does topping damage trees?

1) **Topping reduces food-making capacity.** Trees require a large leaf surface area to provide food for maintenance and growth. Topping cuts off a major portion of the tree's food-making potential and depletes the tree's stored reserves.

2) **Topping stimulates undesirable "water sprout" growth.** While removing most of the buds that would form a normal branch system, topping often stimulates the regrowth of dense, unattractive, upright branches (water sprouts) just below the pruning cut. Water sprout regrowth is vigorous. A topped tree will rapidly return to its original height, but will lack its original form.

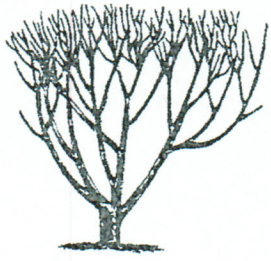
3) Topping leava large wounds. The branch wounds left from topping are slow to close, therefore more vulnerable to insect attacks and fungal decay. An invasion by either pest can spread into the trunk, killing the tree.

4) **Topping creates a hazard.** Weakened stubs are more prone to wind and storm breakage because they generally begin to die back or decay.

S) **Topping injures bark.** Increased sun exposure on trunk and branches can lead to severe bark damage.

6) **Topping disfigures trees.** Ugly branch stubs, conspicuous pruning cuts, and a broom-like branch growth replace natural beauty and form. Topping reduces the real estate value of trees by 20 - 100 percent. A correctly trimmed tree increases in value at each pruning.

Before Tree Topping



After

Why are trees topped?

Some homeowners and unprofessional tree pruners practice topping whenever trees reach an undesirable height. They mistakenly believe that topping will reduce the storm hazard of falling branches, when in fact, topping has the opposite effect. People also top trees when they interfere with utility wires, buildings, solar collectors, or sunny garden areas.

Selection of trees that only reach desired maximum heights eliminates severe pruning later. If you must prune a tree heavily every five to seven years, the tree is too large for the site. Replace it with a smaller species.

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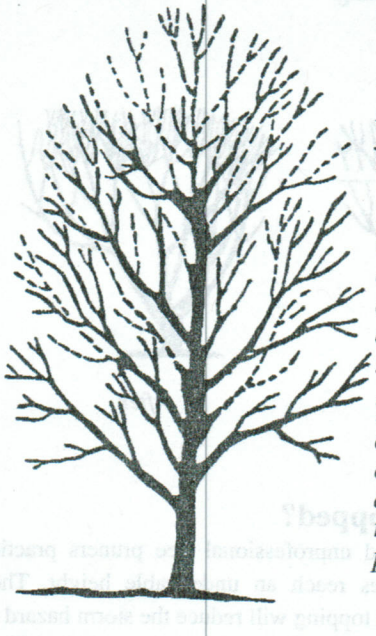
The National Arborist Association considers topping an unacceptable practice and advises against it. Unfortunately, even some legitimate tree service companies indiscriminately top trees. Before selecting a tree service, find out which companies advocate topping and avoid patronizing them.

What are the alternatives?

In order to avoid topping, newly planted trees should be properly pruned to develop a good branch structure as they grow. When a mature tree's height must be reduced, an alternative to topping is "**drop-crotching**".

Drop-crotching is a type of thinning cut that reduces a tree's size while preserving its natural shape. To drop-crotch, select and cut higher branches back to laterals at least one-third the diameter of the limbs being removed. Cut outside the branch collar at a 45 to 60 degree angle to the branch bark ridge. Leave the branch collar intact to help prevent decay from entering the trunk. This type of thinning cut will stimulate growth throughout the tree and discourage water sprout development.



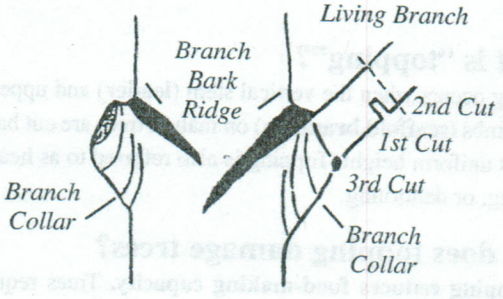
Drop-crotching

Lateral limbs are pruned where they join large diameter side branches.

The center leader is cut back to a large diameter secondary branch so that a modified leader remains.

This does not change the direction of growth. It encourages stimulation of the apical growth point.

Whenever removing limbs greater than 1 inch in diameter, use the three-cut method to avoid tearing bark. First, about 12 inches from the trunk, cut halfway through the limb from the underside. Second, about 1 inch past the first cut, cut through the limb from the top side. The limb's weight will cause it to break between the two cuts. Make the third cut outside the branch collar, as described earlier. Use a handsaw to provide greater control.



Branch bark ridge and branch collar

Don't coat pruning cuts with tree paint or wound dressing, except for control of certain disease-carrying insects. These materials won't prevent decay or promote wound closure.

Can topping be corrected?

A professional arborist can improve the condition of a tree, even after it's been severely topped and shows heavy water sprout regrowth. As the water sprouts begin to gain caliper, they can be selectively "thinned out" using properly placed branch collar cuts. New growth can be directed outward to expand and round out the crown. This process will need repeating for a few years. The scars, both physical and visual, will never completely disappear.

A wiser alternative to topping is careful selection and training of your young trees. Avoid topping altogether. Allow your trees to realize their full potential for health and beauty in the landscape.

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PUBLICATION 430-457

A Guide to Successful Pruning

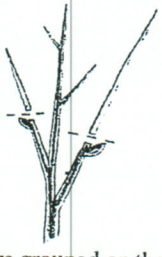
Pruning Evergreen Trees

Susan C. French, Extension Technician
Bonnie Lee Appleton, Extension Horticulturist

Anatomy of an Evergreen Tree

Evergreen trees have leaves that persist year round, and include most **conifers** and **some broad-leaved trees.** Evergreen trees generally need less pruning than deciduous trees.

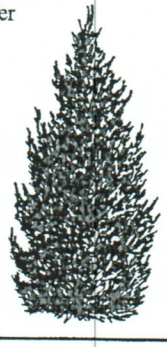
Conifers are distinguished from other plants by their needle or scale-like leaves, and their seed-bearing cones. Because conifers have dominant **leaders**, young trees rarely require training-type pruning. The leader is the vertical stem at the top of the trunk. If a young tree has two leaders, prune one out to prevent multiple leader development. Selective branch removal is generally unnecessary as evergreens tend to have wide angles of attachment to the trunk.



Pruning back multiple leaders

Evergreens are grouped on the basis of their branch arrangement. Pines, spruces, and firs have **whorled** branches that form a circular pattern around the growing tip. The annual growth of a whorl-branched conifer is determined by the number of shoots that are pre-formed in the buds. Whorl-branched conifers usually have only one flush of growth each year in which these pre-formed shoots expand into stems that form the next whorl.

Random-branched conifer

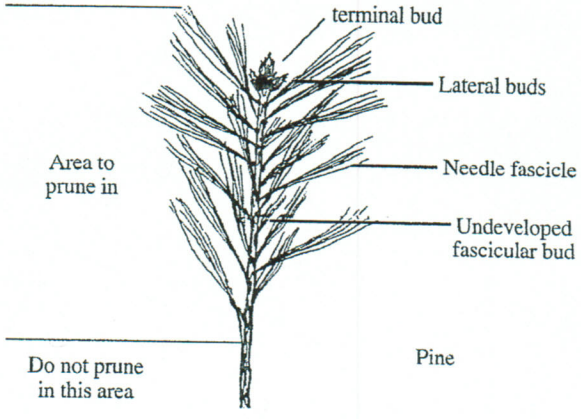


Branch arrangement of a whorl-branched conifer (Avoid pruning into the inactive center)

The second group of evergreens are those with a **random branching** habit. Yew, arborvitae, cedar, false cypress, and juniper are all random-branched species.

What to Prune

Corrective pruning for evergreen trees consists mainly of dead, diseased, or damaged branch removal. Remove dead wood promptly, by cutting dead branches back to healthy branches. When pruning diseased branches, make thinning cuts into healthy wood, well below the infected area. Thinning cuts remove branches to their points of origin or attachment. Disinfect tools between each cut with products such as "Lysol," "Listerine," or rubbing alcohol. Tests have shown that "Pine-Sol" and household bleach are highly corrosive to metal tools.



Allow evergreen trees to grow in their natural form. **Don't prune into the inactive center (no needles or leaves attached) of whorl-branched conifers** because new branches won't form to conceal the stubs.

When a tree's leader is lost due to storm damage or disease, replace it by splinting to a vertical position the upper lateral on the highest branch. Prune all laterals immediately below the new leader. Use wood or flexible wire splints, removing them after one growing season.

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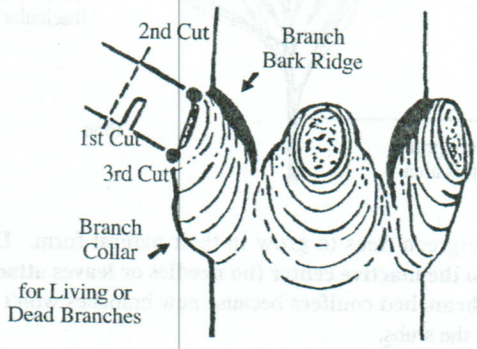
Use a splint to train a replacement leader

How to Prune

Current pruning recommendations advise against pruning branches flush to the trunk. Flush cutting is harmful in several ways: it damages bark as pruning tools rub against the trunk, it removes the **branch collar**, and it goes behind the **branch bark ridge**. The branch collar is the swollen area of trunk tissue that forms around the base of a branch. The branch bark ridge is a line of rough bark running from the branch-trunk crotch into the trunk bark, less prominent on some trees than on others.

The best pruning cut is made outside the branch collar, at a 45 to 60 degree angle to the branch bark ridge. Leave the branch collar intact to help prevent decay from entering the trunk.

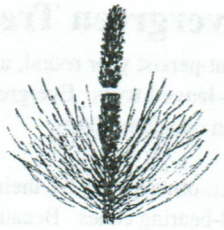
Whenever removing limbs greater than one inch in diameter, use the three-cut method to avoid tearing bark. First, about 12 inches from the trunk, cut halfway through the limb from the underside. Second, about 1 inch past the first cut, cut through the limb from the top side. The limb's weight will cause it to break between the two cuts. Make the third cut outside the branch collar, as described in Publication 430-456.



Branch bark ridge and branch collar on conifers

Don't coat pruning cuts with tree paint or wound dressing, except for control of certain disease-carrying insects. These materials won't prevent decay or promote wound closure. Some tests, however, have shown wound dressings to be beneficial on trees that are susceptible to canker or systemic disease.

Pines and other whorl-branched conifers become denser if new growing tips ("candles") are pinched in half as they expand in the spring. Pinch by hand, as pruning shears will cut the expanding needles and leave them with brown tips.



Pinch back pine *candles*

When to Prune

Most evergreen pruning is done for corrective reasons, so seasonal timing is not as important as it is for deciduous species. Pruning during dormancy is the most common practice and will result in a vigorous burst of spring growth. Whenever unexpected damage from vandalism or bad weather occurs, prune immediately.

There are, however, certain evergreen pruning activities for specific times of the year. Prune random-branched conifers in early spring when new growth will cover the pruning wounds. "Candles" of whorl-branched conifers must be pinched back in mid to late spring. Maintenance pruning of random-branched conifers is done in summer to keep plants within a desired size range. Remove spent flowers of evergreen magnolias at the end of their blooming season to stimulate new growth and development of a thicker crown. During the Christmas season, minor pruning for decorative purposes usually causes no harm.

Whenever possible, avoid pruning evergreen trees in late summer and early fall. Pruning at this time can stimulate new growth that may not harden off before winter, and thus may be damaged or killed by the cold.

(See VCE Publication 430-462, *Evergreen Tree Pruning Calendar*)

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PUBLICATION 430-460

A Guide to Successful Pruning

Deciduous Tree Pruning Calendar

Susan C. French, Extension Technician
Bonnie Lee Appleton, Extension Horticulturist

= Best time to prune

= Do not prune except to correct damage, hazards or structural defects

Where no or timing is not critical

Comments:
1.) Avoid pruning in late winter/early spring due to sap flow (more cosmetic than detrimental)
2.) Avoid pruning from spring through summer due to insect or disease problems
3.) Avoid pruning from October - December due to reduced cold hardiness
4.) Avoid pruning after July because flower buds have set

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Ailanthus													
Alder	✓	✓									✓	✓	
Ash													
Bald Cypress													
Beech							✓	✓	✓				
Birch	✓										✓	✓	1,2
Buckeye					✓	✓	✓						4
Catalpa													
Cherry, Flowering						✓	✓						4
Chestnut, Chinese													
Crabapple					✓	✓	✓						4
Crape Myrtle	✓	✓	✓										3
Dogwood						✓	✓						4
Elm										✓	✓	✓	1,2
Fringe Tree						✓	✓						4
Gingko													

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	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Comments
Goldenraintree										✓	✓	✓	
Hackberry													2
Hawthorn						✓	✓						4
Hickory													
Honeylocust									✓	✓			
Horsechestnut					✓	✓	✓						4
Katsura													
Linden								✓	✓	✓			
Magnolia					✓	✓	✓						4
Maple					✓	✓	✓				✓	✓	1,2
Mimosa													
Mountain Ash													
Mulberry													
Nyssa, Black Gum													
Oak											✓	✓	2
Peach, Flowering						✓	✓						4
Pear, Flowering						✓	✓						4
Plum, Flowering & Purple						✓	✓						4
Poplar										✓	✓	✓	1
Redbud					✓	✓	✓						2,4
Serviceberry					✓	✓	✓						4
Sophora										✓	✓	✓	
Sourwood										✓	✓	✓	
Stewartia	✓											✓	
Sweetgum													
Sycamore, Plane													
Tuliptree													
Willow													1
Zelkova													

✓ = Best time to prune

= Do not prune except to correct damage, hazards or structural defects

Where no ✓ or = timing is not critical

Exception: Timing varies across USDA climate zones - zones within Virginia range from 8a in the Virginia Beach area to 5b along the West Virginia border