

## Department of Horticulture

Purdue University Cooperative Extension Service • West Lafayette, IN

# Pruning Ornamental Trees and Shrubs

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Correct pruning is an essential maintenance practice for trees and shrubs in the home landscape. However, most homeowners regard pruning with considerable, though unnecessary, apprehension. Pruning is not difficult if you understand the basics, learn why, when, and how to prune.

Trees and shrubs should be examined annually for pruning requirements. Too often, pruning is ignored for several years. Then some trees and most shrubs become overgrown and often weak, making drastic pruning a necessity to bring the plant back to usefulness. Regular pruning will help keep the plant in bounds and keep its growth vigorous. To prune successfully, you must 1) know why you are pruning, 2) be correct in your timing, and 3) follow proper techniques using proper tools: why, when, and how.

## Reasons to Prune

Pruning is necessary to maintain a healthy, vigorous tree or shrub. Specifically, pruning is practiced to:

**Maintain or reduce plant size.** Pruning can prevent a plant from overgrowing its space in the landscape and eliminates the need for drastic cutting of crowded, overgrown plants. It can allow for growth of plants under or adjacent to the pruned plant. It can also serve to reduce leaf area on newly planted trees and shrubs. This promotes survival through transplanting and consequent root loss.

**Remove undesirable growth.** Pruning can encourage plant vigor through the removal of weak, overcrowded growth. Such thinning often improves the visual balance or symmetry of the plant.

**Remove dead, diseased, or broken branches.** Pruning will aid in maintaining the shape, vigor, and health of the plant.

**Stimulate flowering and fruiting.** Removal of the current year's old, faded flowers and fruit clusters will promote flower buds for the following season.

**Rejuvenate and restore old plants to vigorous growth.** Proper pruning can restore a youthful, natural growth habit in certain overgrown shrubs.

**Prevent damage to life and property.** Pruning can minimize the hazard of limbs interfering with power lines or overgrowing structures. It can also remove weak crotches before limbs break in strong winds and open blocked sight lines caused by overhanging limbs at driveways or street corners.

**Shape plants in an artificial form.** Pruning and shearing can be used to shape plants as hedges or for rigidly formal espaliers or topiaries.

## Myths About Pruning

There are a number of myths and misconceptions about pruning which should be laid to rest.

**Pruning is difficult.** Pruning is straightforward if one knows a little about how the plant grows and what it should look like when the process is complete.

**Plants will die if pruned at the wrong time of year.** Plants may be injured, but seldom, if ever, are they killed by poorly timed pruning.

**All pruning must be done during the winter.** Actually, many plants are best pruned during the growing season.

**Topping shade trees will keep the trees from causing damage to the home.** Shoots which grow after topping are weaker than the original limbs. They will be more likely to split off and cause damage unless they are removed every few years. Also, wood rots are more likely to be a problem in topped trees, resulting in poorer tree health and greater likelihood of limb breakage.

**Removing a tree is a crime against nature.** If a plant is in the wrong place, from a functional or aesthetic viewpoint, it is by definition a weed and can be removed. This is especially true when a tree must be mutilated beyond recognition to eliminate the problem it is causing.

**Most trees need pruning.** Actually, mature trees seldom do. Young trees usually benefit because pruning helps in establishing the basic branch structure and in overcoming transplanting shock.

**Hedge shears are all you need to prune shrubs.** Hedge shears are intended to prune hedges, only! Using them on shrubs not intended as hedge plants destroys the natural grace and beauty of the plants.

**Anyone with a pickup truck and a chain saw is a qualified pruner.** Indiana has no licensure for tree pruners, thus some individuals doing pruning work may not be knowledgeable or skilled in proper techniques. Never hire someone who stops and tells you that your plants need pruning and that he will do it right away. Obtain references, and see their work first!

**All cut surfaces must be treated with tree paint.** While long recommended, the evidence is conflicting on the use of tree paint. Largely, its use should be thought of as cosmetic, helping to hide light-colored scars.

## Times to Prune for Specific Purposes

Timing of pruning is based on the flowering, fruiting, or growth habits of a plant, its tendency to “bleed,” and the fact that pruning usually stimulates a flush of re-growth. Most plants can be pruned at almost any time of year without jeopardizing basic survival. However, it is preferable to prune specific plants at specific points in the year.

### Pruning According to Season of Bloom

Trees and shrubs that flower before the end of June should be pruned immediately after flowering. Flower buds develop during the previous season’s growth, thus, the flowers for the current year’s bloom developed last year and overwintered in the bud. If pruned before spring flowering, the flower buds will be removed, thus eliminating flowering. **Table 1** shows examples of plants which should be pruned after flowering.

Other trees and shrubs, those which flower after the end of June, should be pruned in winter or early spring before new growth starts. These plants develop flower buds during the spring of the flowering season. Examples of plants of this type are shown in **Table 2**.

Certain plants may be lightly pruned both before and after flowering. This often increases flower and fruit production, and several may produce a second bloom during the year. **Table 3** shows examples of this plant type.

In any of the foregoing cases, the timing of pruning is based on common sense to maximize flowering of a plant which was planted for its flowers. If your pruning is timed such that flowering is sacrificed, it will not be detrimental to the plant’s survival. It will simply mean a loss of one season’s floral display.

**Table 1.** Spring-flowering trees and shrubs which should be pruned after flowering.

Scientific name	Common name
<i>Amelanchier</i>	Shadblow
<i>Berberis</i>	Barberry
<i>Calycanthus</i>	Sweetshrub
<i>Caragana</i>	Peashrub
<i>Celastrus</i>	Bittersweet
<i>Cercis</i>	Redbud
<i>Chaenomeles</i>	Flowering quince
<i>Chionanthus</i>	Fringetree
<i>Cornus florida</i>	Flowering dogwood
<i>Cornus kousa</i>	Kousa dogwood
<i>Cornus mas</i>	Cornelian cherry
<i>Cotinus coggygria</i>	Smoketree
<i>Cotoneaster</i>	Cotoneaster
<i>Crataegus</i>	Hawthorn
<i>Deutzia</i>	Deutzia
<i>Euonymus</i>	Winged spindle tree
<i>Forsythia</i>	Forsythia
<i>Kalmia latifolia</i>	Mountain laurel
<i>Kolkwitzia amabilis</i>	Beautybush
<i>Laburnum</i>	Laburnum
<i>Ligustrum</i>	Privet
<i>Lindera</i>	Spicebush
<i>Lonicera</i>	Honeysuckle
<i>Magnolia</i>	Magnolia
<i>Malus</i>	Crabapple
<i>Philadelphus</i>	Mock orange
<i>Pieris</i>	Andromeda
<i>Prunus</i>	Flowering cherry and plum
<i>Pyracantha</i>	Firethorn
<i>Rhododendron</i>	Rhododendron and Azalea
<i>Rhodotypos scandens</i>	Black jetbead
<i>Ribes</i>	Currant
<i>Rosa</i>	Climbers and shrub roses
<i>Sorbus</i>	Mountain ash
<i>Spiraea thunbergii</i>	Thunberg spirea
<i>Spiraea x vanhouttei</i>	Vanhoutte spirea
<i>Styrax japonica</i>	Japanese snowball
<i>Syringa</i>	Lilac
<i>Viburnum</i>	Viburnum
<i>Weigela</i>	Weigela
<i>Wisteria</i>	Wisteria

## Pruning to Maximize Fruiting Display

Shrubs or trees that are prized for their fruit should be pruned after the fruit drops or is eaten by wildlife. Although they may flower early in the season, the fruit should be allowed to develop. After the fruit has lost its appeal, then prune. Examples of plants in this group are certain viburnums and hawthorns.

## Pruning Needle (Coniferous) Evergreens

To promote a compact plant, coniferous evergreens can be pruned in late spring as the new branches elongate, but before they become stiff. Otherwise, they, like broadleaved evergreens, can be pruned whenever the wood is not frozen. However, coniferous types will generally not develop new shoots on older wood, so it isn't advisable to cut back beyond the living foliage portion of the branches.

## Pruning Trees Known as “Bleeders”

Some deciduous trees have an exceptionally heavy sap flow in the early spring. If cuts are made then, the trees will “bleed.” While this sap loss does not injure the tree, it can be objectionable aesthetically and cause problems for pedestrians, automobiles, etc., passing underneath. “Bleeding” can be avoided by pruning in mid-summer or late fall. Maple, birch, dogwood, elm, walnut, and yellowwood are examples of trees best treated this way.

**Table 2.** Summer-flowering trees and shrubs which should be pruned before spring growth begins.

Scientific name	Common name
<i>Abelia x grandiflora</i>	Glossy abelia
<i>Acanthopanax</i>	Aralia
<i>Albizia julibrissin</i>	Silk tree
<i>Buddleia davidii</i>	Butterflybush
<i>Callicarpa</i>	Beautyberry
<i>Hibiscus syriacus</i>	Shrub-althea
<i>Hydrangea arborescens</i>	Smooth hydrangea
<i>Hydrangea paniculata</i> 'Grandiflora'	Pee Gee hydrangea
<i>Hypericum</i>	St. Johnswort
<i>Koelreuteria paniculata</i>	Goldenrain tree
<i>Magnolia virginiana</i>	Sweet bay
<i>Rhus</i>	Sumac
<i>Rosa cvs.</i>	Hybrid tea roses
<i>Sorbaria</i>	False-spirea
<i>Stewartia</i>	Stewartia
<i>Symphoricarpos</i>	Snowberry, Coralberry

## Pruning in Anticipation of Growth Stimulation

In general, except for the cases already cited, the best time to prune is when the plant will recover the fastest. Severe pruning should be done just before regrowth starts in the spring so bare stubs will be hidden quickly. Pruning in late summer should be avoided since it stimulates succulent growth which may not harden sufficiently to avoid winter dieback. Storm-damaged plants should be pruned as soon after the damage occurs as possible.

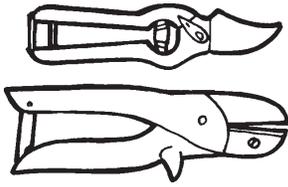
## Tools for Pruning

Proper pruning requires proper tools, employing correct methods, and applying the methods accurately to the appropriate plant. Tools should be of the highest quality you can afford, and they should be sharp. Keep them in good condition by lubricating regularly, cleaning to prevent rust, and only using them for their intended function. (See **Fig. 1** for examples of common pruning tools.)

**Table 3.** Trees and shrubs which may be pruned both before and after bloom.

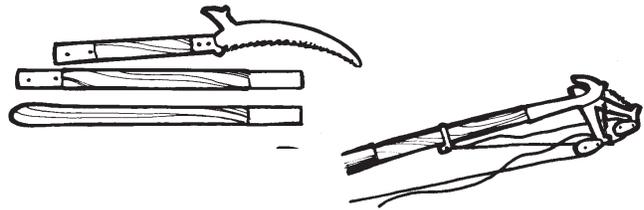
Scientific name	Common name
<i>Cornus sericea</i>	Red-osier dogwood
<i>Cotoneaster apiculatus</i>	Cranberry cotoneaster
<i>Cotoneaster divaricatus</i>	Spreading cotoneaster
<i>Cotoneaster multiflorus</i>	Many-flowered cotoneaster
<i>Mahonia aquifolium</i>	Oregon hollygrape
<i>Spiraea x bumalda</i>	Anthony Waterer and Froebel spirea
<i>Symphoricarpos albus</i>	Snowberry
<i>Symphoricarpos x chenaultii</i>	Chenault coralberry
<i>Weigela</i>	Weigela

**Figure 1.** Examples of common pruning tools.



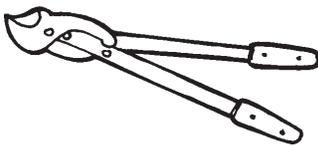
**Hand shears (for branches up to 1/4" diameter)**

Both scissors and blade/anvil types are available in 6-9" sizes. Scissor type cuts more closely, while anvil type allows the cutting of slightly larger branches.



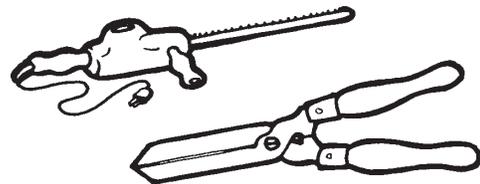
**Pole pruners (for branches beyond arm's reach)**

Either a pruning head with rope action or a saw can be mounted on a pole pruner. A "take apart" handle makes storage easier. A metal handle pole pruner is not safe for use near utility lines.



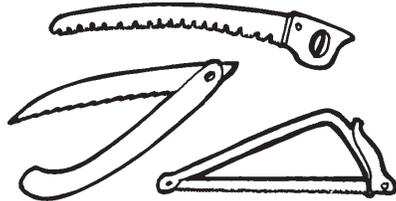
**Lopping shears (for branches up to 1-1/2" diameter)**

Scissors and blade/anvil types each have 16-30" handles. Strong but light-weight handles are critical.



**Hedge shears (for clipping new growth into formal shapes)**

Power and hand types are available in 6-18" blades. These shears are not useful for pruning large branches or for any pruning which is intended to maintain a plant's natural appearance.



**Pruning saws (for branches over 1" diameter)**

Pruning saws are characterized by coarse teeth to prevent gumming. Most cut on the pull stroke for easier, safer use. Chain saws are dangerous to use for pruning. They are best used for cutting up limbs already pruned or for removing dead plants.

**Basic Procedures in Pruning**

There are three relatively simple techniques basic to all pruning situations.

*Pinching* is usually done by hand, and this is a good way to control plant size. (See Fig. 2.)

*Thinning* completely removes some branches back to a main branch, trunk, or soil line. Do not cut into the branch collar when making a thinning cut back to a trunk or main branch; that is, do not cut so near the trunk that you cut through the area at the base of the limb adjacent to the main trunk, known as the branch collar. Such a cut allows for infection to spread into the part of the plant you wish to keep. Cut only the branch to be removed, about 1/2"-2" from the main trunk (depending on age). (See Fig. 3.)

*Heading back* involves shortening branches back to a

good bud or lateral branch. A proper heading back cut should not leave a stub. Make your cut about 1/4" above an active bud or lateral branch. (See Fig. 4.)

**The Wound Dressing Question**

Wound dressing or tree paint is not essential; recent research has pointed out that tree paint or wound dressing is not as advantageous as previously thought. Dressings may actually harbor disease organisms rather than exclude them. It has also been determined that wound dressing slows the wound callusing (often called healing) process, rather than speeding it up. The only reason for painting a pruning cut is a cosmetic one. When appearance is a factor, the painting should be done with latex paint. A good, clean unpainted pruning cut, while perhaps unsightly at first, will probably callus faster than a painted one. On the basis of tree health alone, pruning cuts should not be painted.

Figure 2. Pinching out growing tips of shoots.



Figure 3. Thinning of limbs back to a main trunk.

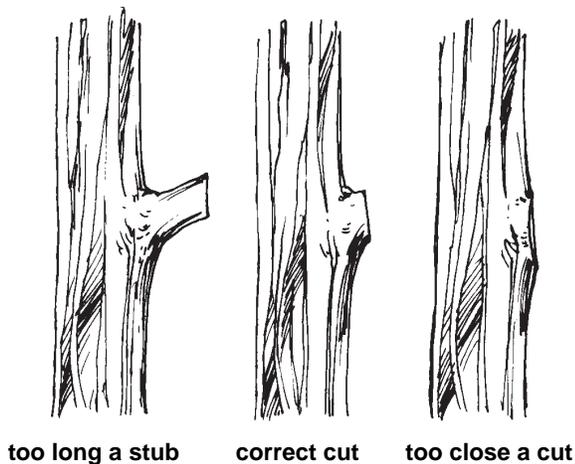
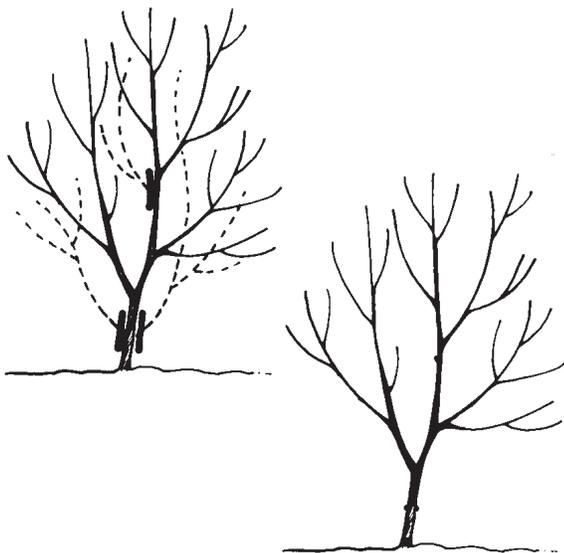


Figure 4. Heading back for size control



If you cut here  
the remaining  
stub will die.



You should  
cut here.

too much branch  
left as a stub



correct location  
of cut

cut too close  
to bud



### Basic Safety Rules for Pruning

1. Call in a professional for large trees or for jobs you don't have the equipment for.
2. Keep all equipment sharp and in good repair.
3. Use equipment only for the job it was designed to do.
4. Be conscious of electric lines when pruning near them.
5. If a power line is touching a tree limb, call the power company fast and stay clear of the tree.
6. Never climb a tree without a safety rope, with or without a ladder.
7. Keep your fingers clear when using hand clippers.
8. Use care in handling pruned limbs and brush to avoid eye injury.

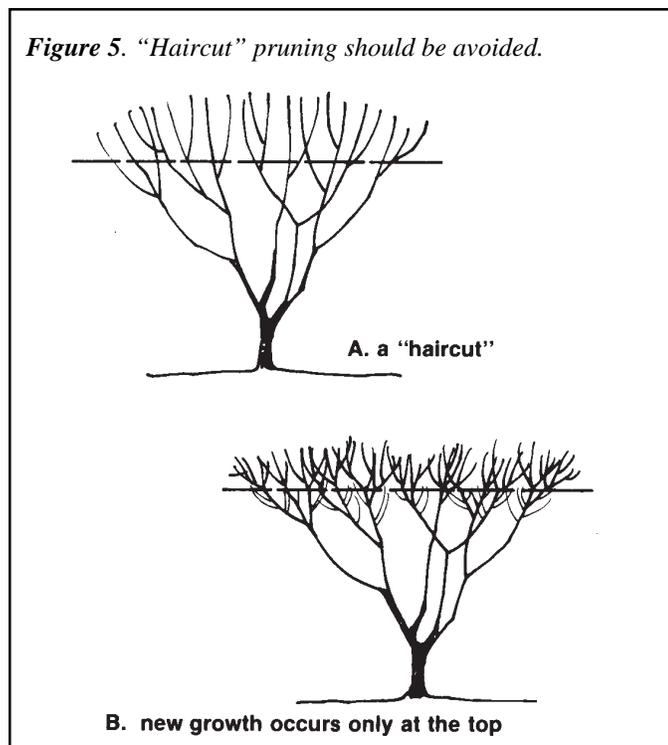
## Procedures for Pruning Specific Trees and Shrubs

### Deciduous Shrubs and Trees

Always allow a shrub or tree to develop its natural shape, except when special effects are desirable, such as for hedges. "Haircut" pruning should be avoided. Perfectly sheared globes and squares make a mockery of the plant's natural form and beauty. (See **Fig. 5.**)

Instead, use the thinning technique on both shrubs and trees. Cut the branches at different lengths, 1/4" above an active bud. Remove twigs or branches selectively and thus reduce overcrowding. Some stems should also be removed at ground level. The length of new shoots should be reduced 1/3 to 1/2 of their length, which induces side shoots to develop.

Cutting above a bud prevents dieback of the stem and encourages a new branch to develop from the bud. The haircut technique causes a dense growth at the ends of the pruned branches which shades the rest of the plant, thus causing the plant to eventually develop a leggy appearance. If a shrub develops a weak, dense growth, thin out many of the smaller branches and twigs. This promotes the vigorous growth of the remaining branches. Also remove branches which tend to rub against one another, opening wounds for the entrance of disease.



Always remove dead, damaged, or diseased branches and limbs from established plants as well as newly planted trees and shrubs. The plant should then develop new, stronger growth, free of diseases. Also, remove dead flower branches, dead flowers, and old fruit stocks as soon as the flowers have wilted or the fruit has dropped. This stimulates new growth and helps to make a stronger tree or shrub. It also encourages plants such as rhododendrons to produce more flower buds for next season.

### Evergreen Shrubs and Trees

With evergreen shrubs, avoid shearing to artificial shapes. If the evergreen plant has a soft, feathery appearance, do not cut it square or make a round shrub out of it. Prune using the thinning technique, thus keeping the natural shape of the evergreen. Remember, the non-green portion of needle-leaved evergreen branches does not normally put out new branches. Therefore do not cut branches back to the old wood. Reduce new growth annually, and when removing the larger branches for thinning, cut close to the main trunk, leaving no stubs. Heavy thinning is needed only every few years.

With certain evergreens such as yews (*Taxus*), a new flush of growth will occur in the early fall. Head back these long shoots to keep the plants in shape.

Broadleaved evergreen shrubs are pruned in the same manner as narrowleaved evergreens, by thinning and heading back. Light pruning every year is preferred, but heavy pruning every three years is acceptable. Rhododendron species benefit from removal of flower heads immediately after flowering. Most types, such as hollies, pyracantha, azaleas, and euonymus, can be cut back severely, but avoid cutting all the way to the ground. Holly trees may be pruned at Christmas time.

To thicken the new growth of coniferous trees such as pines, spruce, or fir, pinch out 1/2 of the candle (the new growth) when it is approximately 2" long in the spring. Do not use shears, since they damage the needles that are around the candle and cause the cut edges to turn brown. This gives the tree an unsightly appearance. Do not top or remove the central leader, if the natural growth habit of the tree is desired. (See **Fig. 6.**)

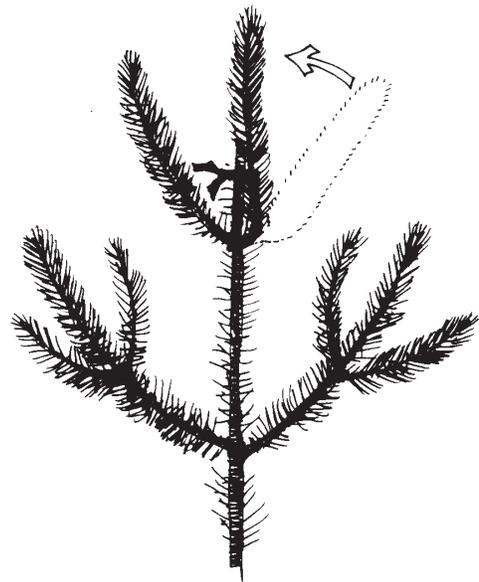
If the terminal of a pine or spruce has been lost, it is necessary to aid the plant in growing a new terminal shoot. Without assistance, a single terminal will probably not be re-established, and multiple leaders will result. To form a new terminal, bend one of the youngest lateral branches near the terminal into an upright position.

**Figure 6.** Pinch pine candles when new growth is about 2 inches long. Remove 1/2 of the candle.



Secure it to the dead terminal stub or insert a stake for rigidity. After a season, this branch will take over as a terminal shoot. Once this occurs, remove the stub or stake, and the plant will resume its characteristic growth habit. (See **Fig. 7A and B.**)

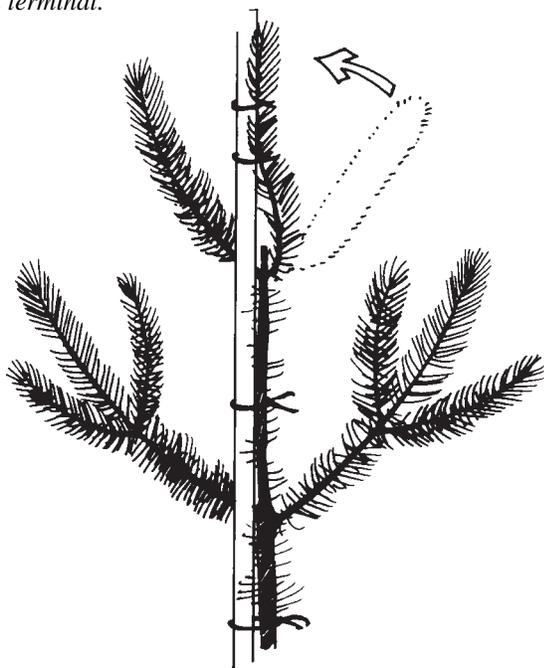
**Figure 7B.** The lateral branch can also be secured with a stake.



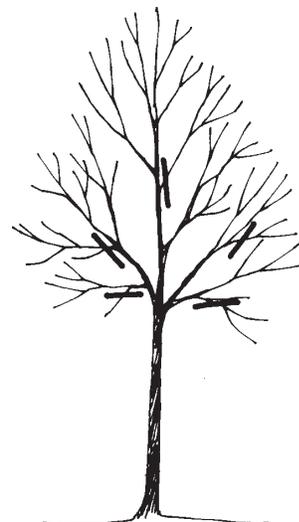
### Newly Transplanted Trees

In the digging process at transplanting time, bare root trees and shrubs suffer root damage as well as a loss of roots. To compensate for this loss of roots, the leaf area of the plant should be reduced by 1/3 to reduce water loss due to transpiration and evaporation. The natural form of newly planted trees and shrubs should be preserved by thinning. Remove branches and parts of branches by cutting at different lengths as previously described. (See **Fig. 8.**)

**Figure 7A.** Replace a lost terminal leader by tying a lateral branch in a vertical position and securing it to the stub of the dead terminal.



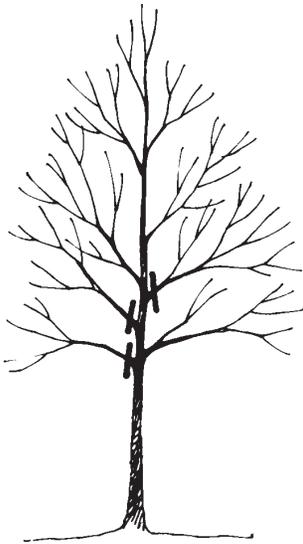
**Figure 8.** Use the thinning technique to remove 1/3 of the leaf area of newly-planted trees.



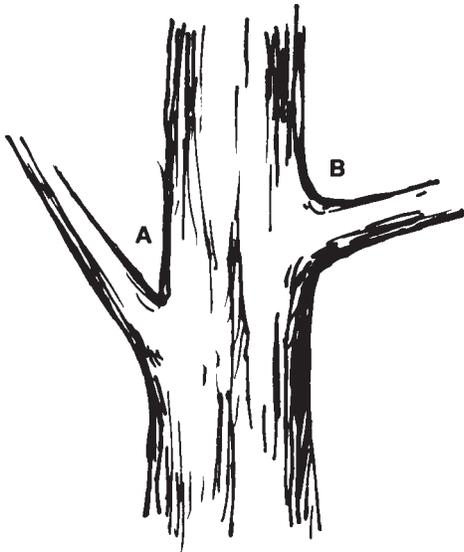
When the tree is approximately 2 years old, establish good branch spacing (See **Fig. 9**). Branches should arise alternately from the main stem and be well-spaced radially. This will allow stronger limbs to develop. Select branches with the widest angles in the crotch. The wider this angle, the stronger the limb attachment. (See **Fig. 10**.)

On most shade trees, the top-most growing point is critical in achieving a form typical of the species. This growing point is called the central leader, and there should be only one. It should not be cut.

**Figure 9.** Establish alternate branching.



**Figure 10.** Remove branches with a narrow angle or weak crotch (A), and leave wide-angled or strong crotches (B).



## Large Trees

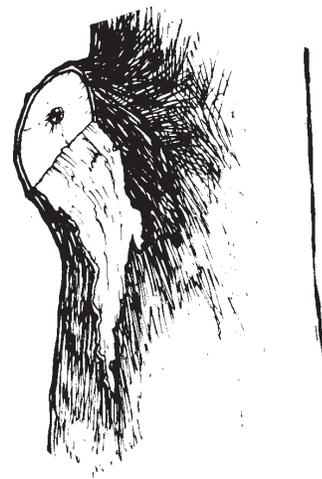
Proper pruning also helps to prevent injury and damage to life and property. This usually involves the removal of large branches or limbs from trees. Where tree limbs are near power lines, call the power company and ask them to remove them. Do not try to remove tree limbs from power lines yourself.

Low-hanging branches may cause injury to individuals mowing the lawn or walking on the street. Also, branches sometimes rub against the house and roof. To remove the branches that are over 1" in diameter, use the double cut method. If the double cut method is not used, the branch will tear and splinter the trunk. This removes a large portion of the bark, causing a large wound which calluses with difficulty and may further result in permanent damage to the tree. (See **Fig. 11**.)

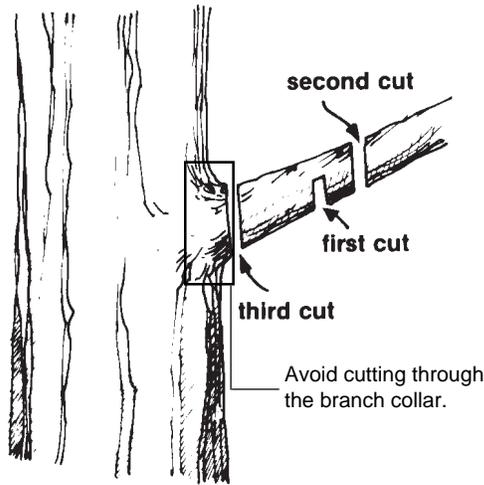
To double cut, first cut halfway on the underside of the limb (about one foot from the tree trunk). Then (several inches further out) make a second cut through on the upper part of the limb (See **Fig. 12**). When the branch is removed, there is no splintering of the main tree trunk. Then remove the stub by conventional methods, taking care not to cut into the collar. (See "General Pruning Procedures").

Beware of rejuvenation techniques sometimes used on large old trees. Homeowners are sometimes "conned" into having the tops of old trees completely cut back, leaving only the stubs. These stubs eventually decay. Also, since the tree is in such a weakened condition, it may die prematurely. If you have large limbs that need to be removed, secure the professional services of an arborist. An arborist can drop work a tree, that is, lower

**Figure 11.** Failure to use the double cut method can result in trunk damage and bark stripping.



**Figure 12.** Double cut method for large limb removal.

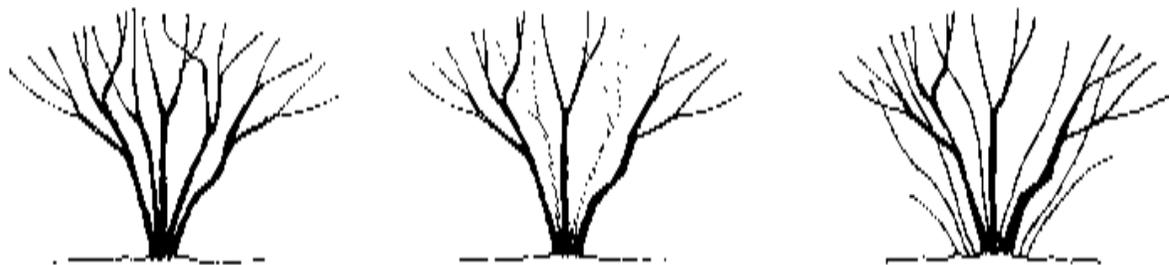


the height, by removing limbs that are causing problems. When completed, the tree will still retain the beauty of its natural shape. Remember, a tree that has a trunk diameter of 20-24 inches may be worth up to \$10,000 on a replacement value scale. Therefore, if you have a large, valuable tree, secure the services of a professional arborist.

### Old, Overgrown Shrubs

Another aspect of pruning is the renewal of declining shrubs. In renewal pruning, remove one-third of the old, mature stems per season. These large, old branches are removed at the ground level. Leave the young vigorous branches. The water sprouts that develop should be cut back to different lengths and encouraged to develop into strong branches for the shrubs by the thinning process. (See Fig. 13.)

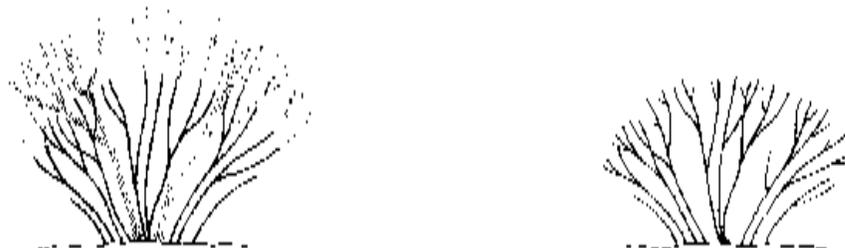
**Figure 13.** Renewal pruning.



First year - A. Large old bush. B. Remove 1/3 of old branches at ground level. C. Growth at end of first season.



Second year - D. Use thinning technique to remove 1/3 of old branches and to cut back new growth. E. Growth at end of second season.



Third year - F. Use thinning technique to remove remaining old branches and to cut back new growth, G. Growth at end of third season (rejuvenated shrub).

Lilac wood often is more than 3 years old before it flowers. Therefore, large, overgrown lilac bushes can gradually be cut back over a period of years, but do not remove all the old flowering wood until the new growth begins to flower. Then the bush will flower every year and will not have any barren years.

If it is essential to immediately reduce the size of a shrub, rejuvenation pruning is appropriate for some species (**Table 4**). Cut back the entire top of the plant to the ground line. Many new shoots will grow from the base, and they will require thinning. As much as 3/4 of the new growth should be removed, depending on the species. (See **Fig. 14**.)

Some plants frequently suffer winter die back of all above-ground stems. These may be safely rejuvenation pruned to produce rapid new growth. These plants are considered to be usefully winter hardy. They can be used for landscaping purposes similar to an herbaceous perennial, even though severe rejuvenation pruning often is necessary.

**Hedges, Espaliers, and Topiary**

Plants are occasionally sheared to unnatural shapes. Hedges as barriers are the most common example. However, hedges are often improperly pruned, with the top trimmed flat and the sides sloped inward so that the base is more narrow than the top. This shades the lower portion of the hedge, preventing dense leaf growth. Thus, the plants become leggy, the hedge becomes straggly, and the screening function is not achieved. In proper hedge shearing, the top is shaped more narrow

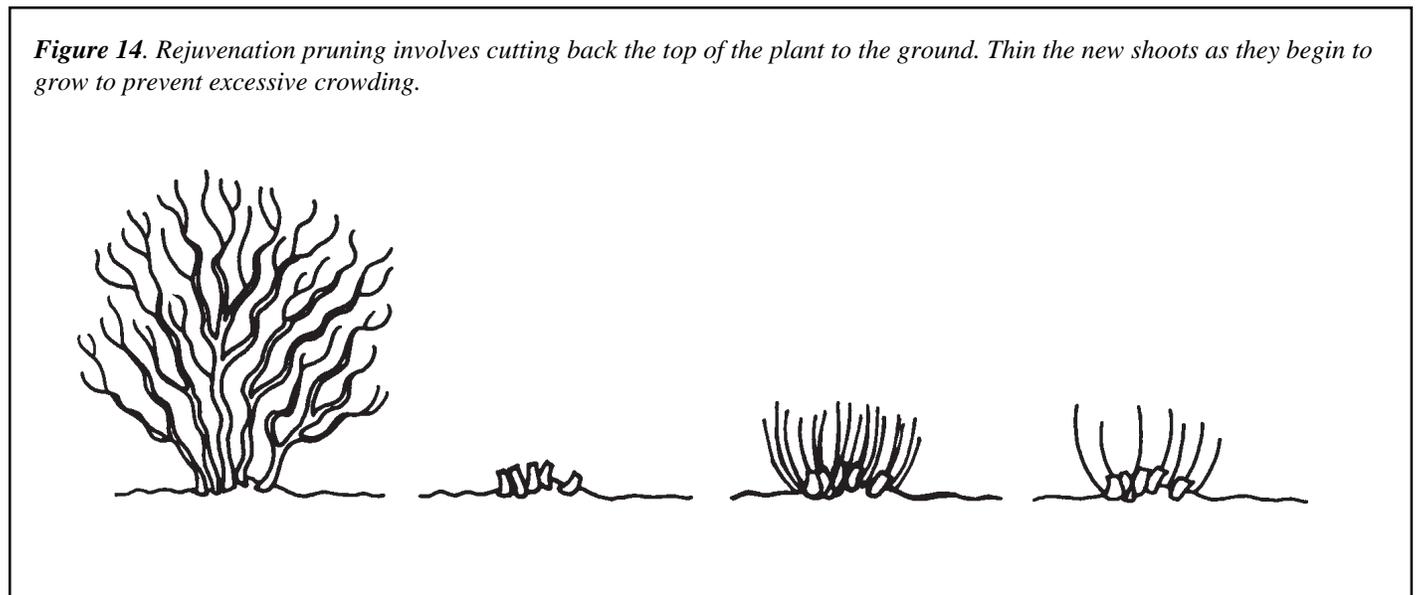
**Table 4.** Landscape plants which may be rejuvenation pruned (completely cut back to the ground).

Scientific name	Common name
<i>Buddleia davidii</i>	Orange-eye butterflybush
<i>Forsythia</i>	Forsythia
<i>Hibiscus syriacus</i>	Shrub-althea
<i>Hydrangea arborescens</i> 'Grandiflora'	Hills-of-snow
<i>Hydrangea quercifolia</i>	Oakleaf hydrangea
<i>Ligustrum vulgare</i>	Privet
<i>Lonicera</i>	Honeysuckle
<i>Spiraea</i>	Spirea
<i>Syringa</i>	Lilac

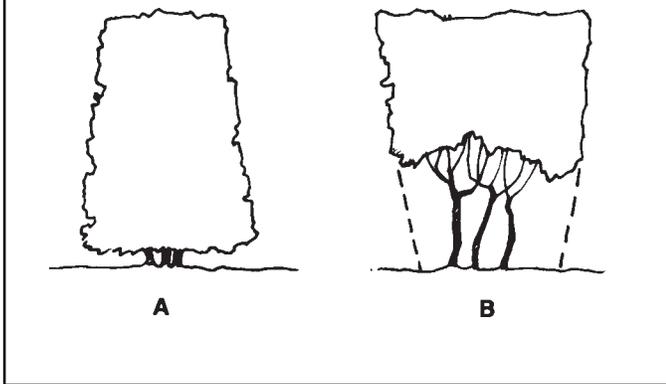
than the base. This means that light can penetrate to the lower portions of the plants, growth can be maintained, and a full appearance over the entire height of the hedge can be attained. This simple technique helps the hedge remain a satisfactory barrier for a long period of time. (See **Fig. 15**.)

Two other types of pruning plants to unusual shapes are espalier and topiary. Both originated in European gardens and are very time consuming. An attractive plant requires both dedicated effort and constant attention. Not all landscape designs are appropriate for such plants, and in all cases, their use should be limited to focal points due to their highly unusual appearance.

Espaliering is the practice of training a tree or shrub to grow flat. Almost any tree or shrub can be trained flat by



**Figure 15.** A properly pruned hedge (A) and an improperly pruned hedge (B).

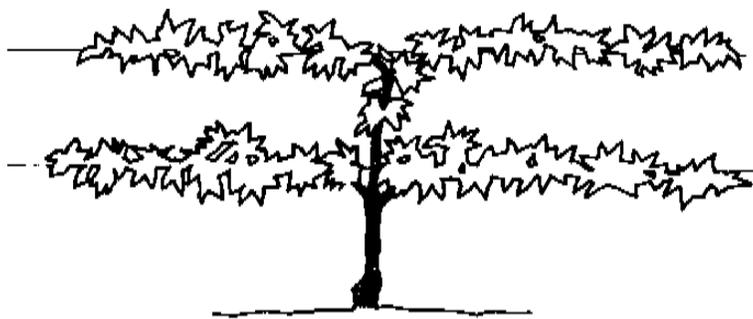


continually removing growing points that go in unwanted directions. Allow the rest of the growing points to develop in their own way.

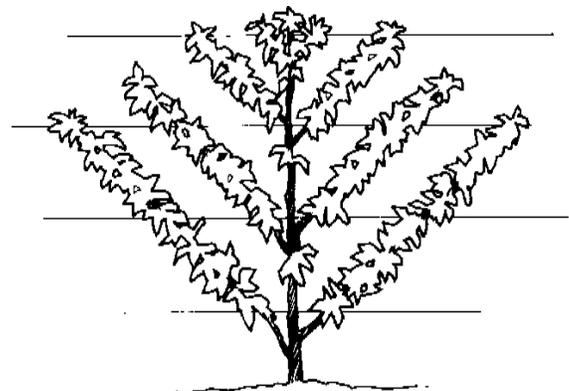
Before locating a plant next to your house for espaliering, place an iron or wooden support a few inches away from the house. This prevents any disfiguration of the wall and allows for plant support and easy plant removal at a future date. (See Fig. 16.)

Topiary is a shearing technique occasionally done on boxwood, juniper, pyracantha, yew, and privet. Part the branches to find a basic form. Remove limbs you don't want. Wherever you want to form a clump, leave some branches and shear them to the outline you desire. Remove all twigs and leaves along branches between clumps. Each season new branches and leaves will tend to fill in the spaces between clumps.

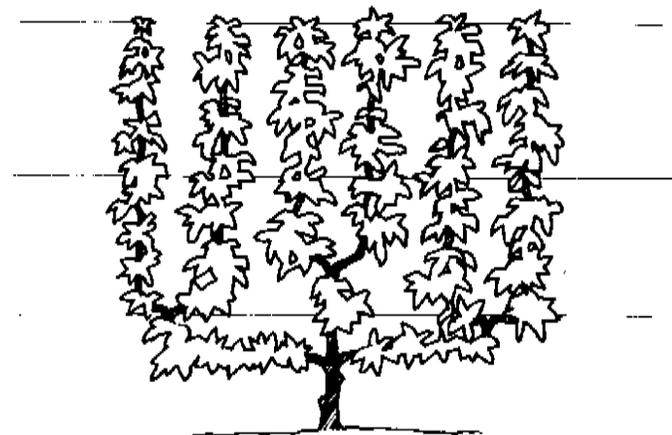
**Figure 16.** Some examples of classical espalier forms.



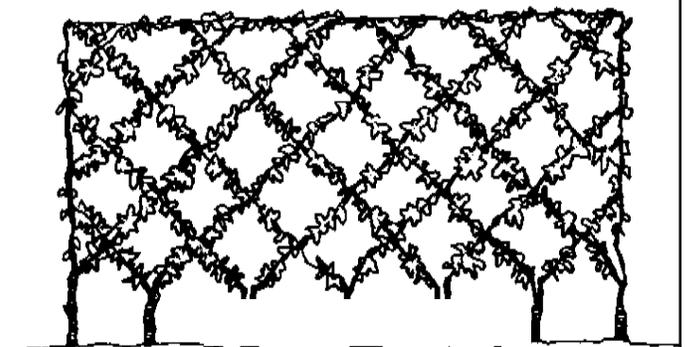
**Double cordon**



**Palmette**



**Candelabra**



**Belgian fence**

## Review of General Pruning Procedures

1. Start pruning while plants are young to maintain the natural form and avoid the need for corrective pruning later.
2. Know why the plant is being pruned and what your final goal is before you start.
3. Time your pruning properly for aesthetic and functional reasons.
4. Remove any dead, broken, injured, diseased, or insect infested branches. When removing diseased wood, clean your tools after each cut by immersing cutting blades in rubbing alcohol or household bleach.
5. Prune out undesirable branches such as crossovers, suckers, sprouts, or those branches which are too long or too low.
6. Make proper cuts without leaving stubs, but don't cut into the collar.
7. Clean and oil metal parts of pruning tools when finished.

*\* Professor emeritus*

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For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.

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