

SCOTT'S FAMILY TREE NURSERY PRUNING GUIDE

Before you can cook a meal, you have to know what your ingredients are. Before you can drive a car, you have to know about gears and which pedal is which and really bad things happen if you put regular gasoline in a diesel. In the same way, you have to know what kind of plant something is before you can safely prune it. If you are ever unsure, please ask for clarification. NEVER prune it if you don't know what kind of plant it is.

HERBACEOUS PLANTS

Herbaceous plants are often the small pretty flowering ones that you see everyone planting in the spring. There are three main types. Annuals: which die off every year and have to be replanted. Biennials: which live two years before they die. Perennials: These may look dead in winter, but may live for decades to flower again every spring.

ANNUALS

Based on its life cycle, a plant is classified as either an annual, biennial, or perennial.

An *annual*, such as a zinnia, completes its life cycle in 1 year. Annuals are said to go from seed to seed in 1 year or growing season. During this period, they germinate, grow, mature, bloom, produce seeds, and die. Summer annuals complete their life cycle during spring and summer; most winter annuals complete their growing season during fall and winter. There are both winter and summer annual weeds, and understanding a weed's life cycle is important in controlling it.

BIENNIALS

A *biennial* requires all or part of 2 years to complete its life cycle. During the first season, it produces vegetative structures (leaves) and food storage organs. The plant overwinters and then produces flowers, fruit, and seeds during its second season. Swiss chard, carrots, beets, sweet William, and parsley are examples of biennials.

Sometimes biennials go from seed germination to seed production in only one growing season. This situation occurs when extreme environmental conditions, such as drought or temperature variation, cause the plant to pass rapidly through the equivalent of two growing seasons.

This phenomenon is referred to as *bolting*. Sometimes bolting occurs when biennial plant starts are exposed to a cold spell before being planted in the garden.

PERENNIALS

Perennial plants live more than 2 years and are grouped into two categories: herbaceous perennials and woody perennials. *Herbaceous perennials* have soft, non-woody stems that generally die back to the ground each winter. New stems grow from the plant's crown each spring. Trees and shrubs, on the other hand, have woody stems that withstand cold winter temperatures. They are referred to as *woody perennials*.

MAINTENANCE FOR HERBACEOUS PLANTS

DEADHEADING AND DIS-BUDDING

Regular maintenance for annuals includes removing flowers before they go to seed. This process is called deadheading. By preventing seed formation, you can extend the bloom period on many plants, such as pansies, marigolds, and petunias.

Deadheading also improves a garden's appearance. Some early summer-blooming perennials such as daylilies (*Hemerocallis* spp.) produce a second flush of flowers in fall if stems are cut to the ground after bloom and before seeds set. In other cases, however, seeds may be part of the garden show. Gladwin iris (*Iris foeditissima*) is grown for its showy seed pods. Plants such as dahlias produce larger flowers if disbudded. A stalk may have five or six buds; to disbud, snap off all but one on each stem.

STAKING

Many tall herbaceous flowering plants must be tied to stakes or provided with another support system, especially in windy and exposed areas. Delphiniums may reach 8 feet tall, with heavy stalks of bloom; lilies as well as some chrysanthemums and dahlias also require support. Wind, rain, or the weight of foliage and blossoms will bend or break these plants' stems and ruin the display. Broken stems also can lead to disease problems.

Many short perennials such as peonies require support to keep flower heads upright. A plant that flops over onto adjoining plants will smother its neighbors and destroy a garden's attractiveness. Commercial systems such as grates with legs work fine, but you also can improvise support from bamboo stakes, twigs, or branches. Choose staking material that is about 6 inches shorter than the plants' ultimate height.

FALL CLEANUP

Late fall maintenance generally includes cutting back dead stems of herbaceous perennials and pulling out annuals after they are killed by frost. Some gardeners leave seed heads for birds.

Goldfinches love cosmos seeds, and chickadees eat sunflower seeds right off the plants if squirrels don't get them first. The seeds of many perennials, such as purple coneflowers (*Echinacea purpurea*), attract birds in late summer and fall.

PRUNING WOODY PLANTS

Should I prune it or leave alone? Most people feel they ought to prune, but are not sure why or how. Pruning is an accepted practice in orchards and frequently is done in rose gardens, but it is used haphazardly elsewhere. Most often it is performed on ornamentals only when a shrub or tree begins to encroach on its neighbors, a walkway, or a building.

Pruning often is thought of as a way to make a barren tree fruitful. If carried out correctly, it eventually will. However, years of neglect cannot be corrected in one season. Gardeners who don't know how to prune, but do so because they think they should, often end up with no flowers at all because they either prune excessively or prune at the wrong time of the year. And keep in mind that pruning will not compensate for lack of fertilization, poor weed control, or drought conditions.

What then is pruning? Why, when, and how should it be done? Pruning can be described as the removal of part of a woody plant for a specific purpose. This explains the reasons for pruning, the proper techniques and tools to use, and how to prune various types of plants.

MAINTAINING PLANT HEALTH

In pruning to maintain plant health, first consider sanitation, which includes eliminating dead, dying, or diseased wood. Any dying branch or stub can be an entry point or buildup chamber for insects or fungi that could spread to other parts of the tree.

When removing wood infected with disease, such as a fungal canker or blight, it is important to make the cut in healthy wood beyond the infection. Sterilize pruning tools with alcohol or a mild bleach solution after each cut to prevent transfer of disease to healthy stock.

Keeping a shrub or tree from growing too dense can help prevent disease.

Evergreen shrubs, in particular, usually benefit from occasional thinning. This thinning allows light and air to penetrate throughout the shrub, resulting in even growth of healthy foliage.

IMPROVING FLOWERS, FRUIT, FOLIAGE, AND STEMS

The more flowers and fruit a plant produces, the smaller they are. Pruning reduces the amount of wood and diverts energy into production of larger, though possibly fewer, flowers and/ or fruit. Most flowering shrubs bloom either on last year's growth or on new growth. Properly timed pruning increases the production of flower-bearing wood.

Some deciduous shrubs have colored bark that is attractive in winter. Because the best color is produced on young wood, hard pruning produces not only longer stems, but also more intensely colored ones.

Other plants are grown for their foliage. Proper pruning can increase the quality and quantity of foliage produced.

RESTRICTING GROWTH

Over time, trees and shrubs often grow too big for their space, and regular pruning is necessary to keep them in bounds. Formal hedges are pruned to maintain a uniform growth rate. To reduce excessive labor, select plants that will not exceed their allotted space.

BASIC PRUNING TECHNIQUES

TYPES OF PRUNING CUTS

To simplify pruning, remember that there are only three types of cuts: Heading cuts, Shearing, and Thinning cuts.

HEADING involves cutting off part of a shoot or limb. It increases the number of new shoots and stiffens branches, holding them in position.

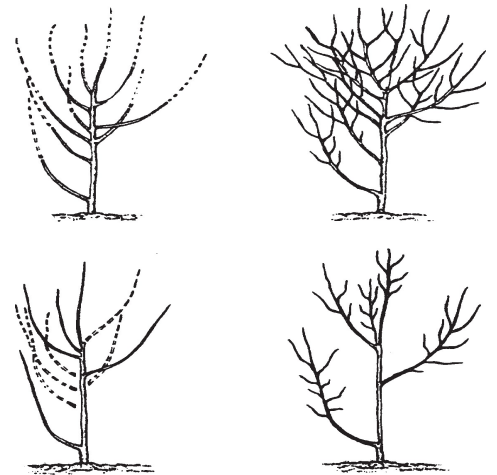
SHEARING involves using hand or gas shears to make many heading cuts simultaneously. It produces a flush of new growth right where the plant was sheared. Only certain species, such as boxwoods, respond well to being sheared. Many if treated this way will respond badly and be prone to insects and disease. It can be very difficult to physically reduce the size of a plant that has been sheared in the past.

THINNING removes undesired wood. In thinning, a branch or twig is cut off at one of the following places:

- Its point of origin from the parent stem
- A lateral side branch
- The "Y" of a branch junction
- Ground level

Thinning results in a more open plant and does not stimulate excessive new growth. By thinning, you can remove considerable growth without changing the plant's natural appearance or growth habit. Thus, you can maintain plants at a given height and width for years, while allowing room for side branches to grow.

Initially we will focus on using only thinning cuts. Once you have received enough training your supervisor will add shearing as well. We do not often use heading cuts because using them inappropriately can be very damaging to plants.

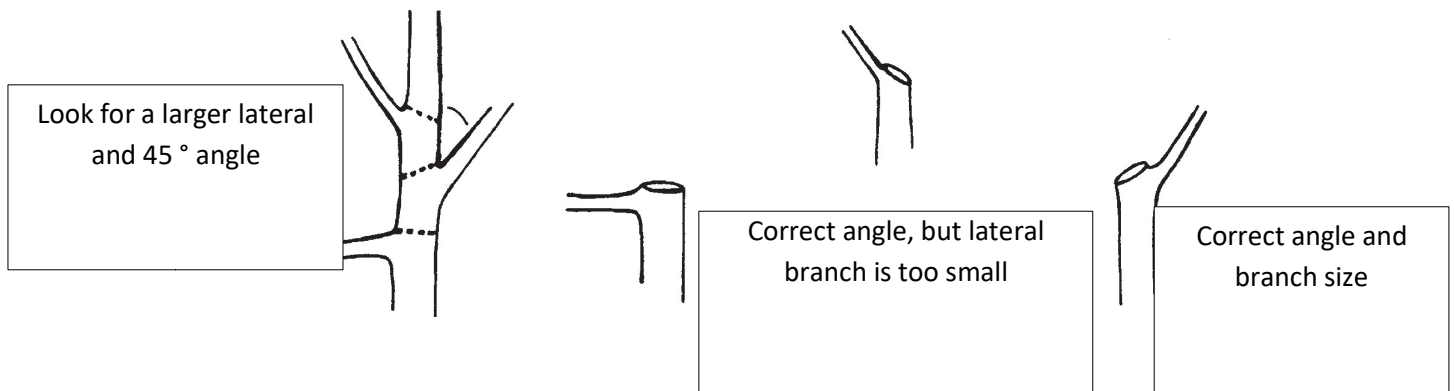
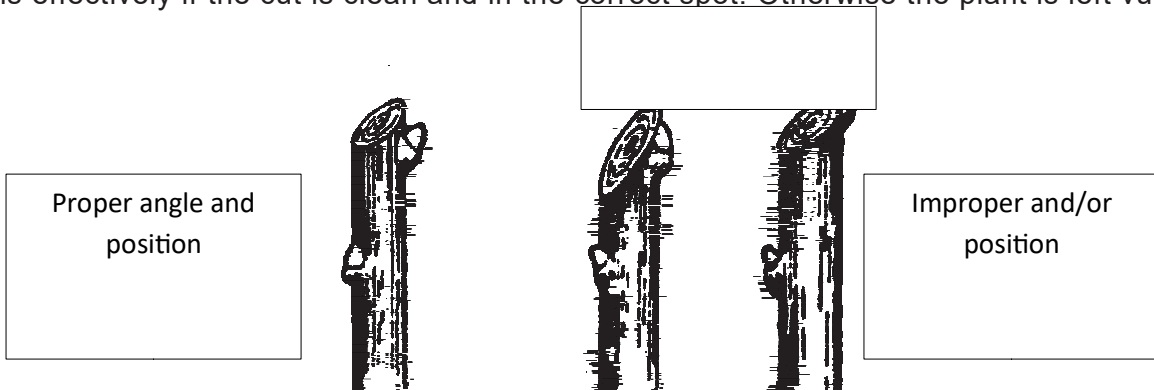


THINNING CUTS ON SMALL BRANCHES

When pruning twigs and small branches, always cut back to a vigorous bud or an intersecting branch. When cutting back to a bud, choose a bud that is pointing in the direction new growth is desired. Be sure not to leave a stub over the bud or cut too close to the bud.

When cutting back to an intersecting (lateral) branch, choose a branch that forms an angle of no more than 45 degrees with the one to be removed and has a diameter of at least one-half that of the branch to be removed.

Make slanting cuts when removing limbs that grow upward; this technique prevents water from collecting in the cut and expedites sealing. Plants never heal. They only seal over a wound. They can only do this effectively if the cut is clean and in the correct spot. Otherwise the plant is left vulnerable to infection.



THINNING CUTS ON THICK BRANCHES

Remove thick, heavy branches flush with the *collar* at the base of the branch, not flush with the trunk. The

collar contains chemically protected tissue. When a dead branch decays naturally, the decay advances downward until it meets this internal protected zone.

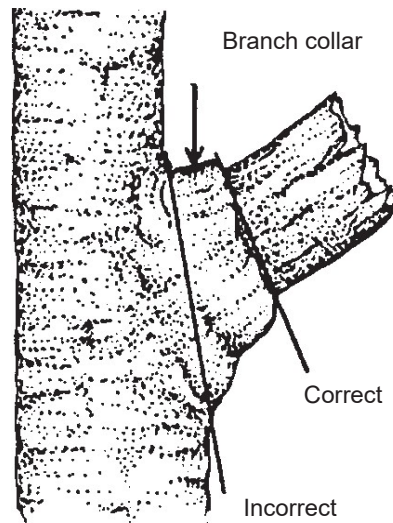
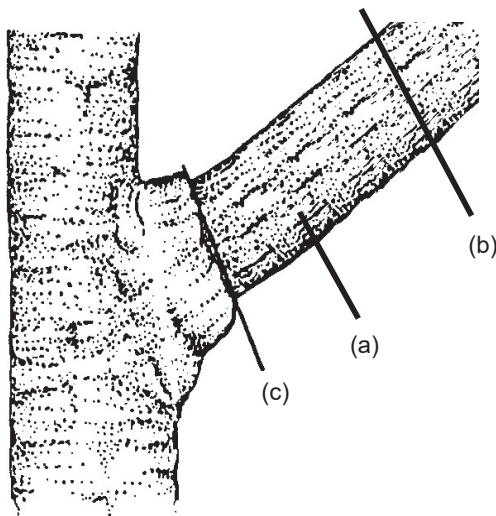
When it reaches this area of very strong wood, the branch falls away. The remaining small zone of decayed wood is walled off within the collar.

If a branch's collar is removed, the protective zone is lost, causing a serious trunk wound that wood-decay fungi can easily infect. Removing the collar causes injury regardless of whether the pruned branch is living or dead.

For more than 50 years, the recommended method of pruning was to cut flush with the trunk and paint. These recommendations have no basis in scientific fact. The flush cut, by damaging the collar, increases a tree's injury. Painting a cut with sealant merely hides the wound and makes the person doing the pruning feel that he or she has done something to "help" the tree. In fact, paints or wound dressings may trap moisture and increase disease problems.

The proper method for cutting branches larger than 1 ½ inches in diameter is shown below:

- A) Undercut the bottom of the branch about one-third of the way through, 6 to 12 inches out from the trunk. If there is danger of the branch damaging lower limbs or objects on the ground, rope it and support it.
- B) Make a second cut from the top, about 3 inches farther out from the undercut, until the branch falls away. If you roped the branch for support, carefully lower it to the ground after the second cut.
- C) Cut back the resulting stub to the branch collar.



SHADE TREES

Young shade trees may not need much pruning to develop a good framework. Mature trees generally are pruned only for sanitation, safety, or size restriction.

You can prune shade trees at any time of the year, although some trees are stressed by being pruned the in the hottest part of the summer. Late-winter pruning often is preferred because it is easy to shape a tree when foliage is gone. Also, fewer precautions are necessary to avoid garden and flower bed damage, and cleanup is easier. A few trees, such as sugar maples, birches, black walnuts, and flowering dogwoods, bleed profusely when pruned in late winter. The bleeding is unsightly but is not harmful.

Summer pruning may be more effective for some species in directing plant growth. It also may cause fewer suckers or *water sprouts* to grow. (A water sprout is a long shoot that grows in an undesirable location on a trunk or major limb.)

FRUIT TREES

The key to keeping fruit trees productive is annual pruning. It is true that different fruits are pruned in different ways, but there is a simple three-step process that works for the vast majority of fruit trees.

In Eastern Washington most people have pome fruits (apples, pears and quince) or stone fruits (peaches, cherries, apricots, plums – anything with a pit). This three-step method works for both.

Though summer pruning is not harmful to the trees, winter makes things easier. Without the tree's foliage, you can really see what you are doing.

STEP 1: CLEAN UP

Start by pruning away any wood that is dead, damaged or diseased.

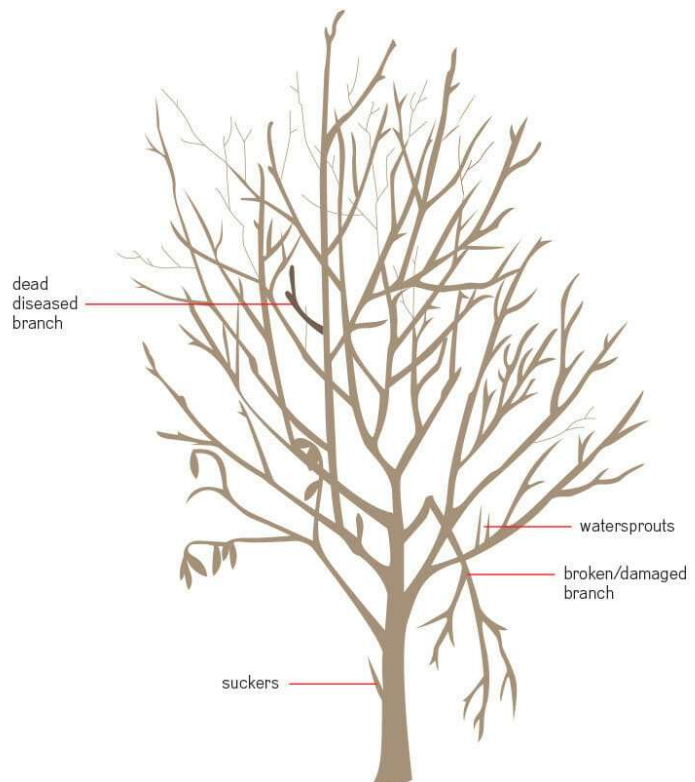
Are sprouts coming from the base of the trunk? If so, remove them. They are called 'suckers' and they often originate from the rootstock rather than the fruiting variety grafted on top.

How about straight sprouts growing vertically from some of the main branches? These vertical branches, or "watersprouts," and should be removed as well.

STEP 2: THIN OUT

The goal of thinning is to allow light and air into the canopy, which boosts fruit production and reduces problems with pests and disease.

First, remove any branches that grow downward, toward the center of the tree or that cross paths with another branch. Once these are out of the way, stand back and take a look. The goal is to have evenly spaced branches splaying out in a radial pattern from the center like spokes in a wheel.



You might find two or more growing from a single point of origin at a narrow angle, for example, or from different points but in a parallel fashion, one hovering over the other. Thin out all but one branch, retaining the branch with the healthiest appearance and best angle of growth. Wider angles can break when laden with fruit and narrower angles lead to bushy growth and fruit that is too high to pick.

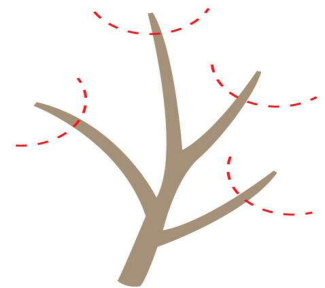
Continue to thin the tree until there is a good 6 to 12 inches of air space around every branch. The smaller the branches are, the closer they can be to each other.

STEP 3: HEAD BACK

Prune back the outermost growth of the tree so the branches become shorter and thicker as they grow, rather than long and gangly. This keeps them from snapping under the weight of the fruit, but pomologists (fruit scientists) will tell you that it also causes the tree's hormones to activate growth lower in the canopy, making for smaller, more fruitful trees.

Heading back the tree means cutting off 20 to 30 percent of last year's growth. You can distinguish last year's growth from two-year-old growth by the wrinkly ring of bark encircling each stem. Depending on the vigor of the tree, this may be anywhere from two inches to 4 feet back from the tip of each branch.

Unlike the previous steps, these cuts will be made part way into each branch. Exactly where you make the cut is important, too. Prune each branch back to a point just above a bud that faces the direction you want that branch to grow in the coming year. If there is another branch close by on the left, for example, prune back to a bud on the right side of the branch.



PRUNING TIPS

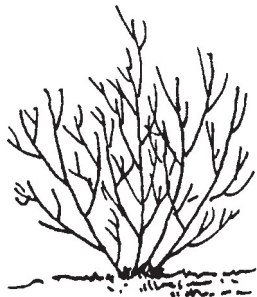
- Sharp shears make for better cuts.
- As a measure of disease prevention, wipe the blades of your pruning shears in solution of isopropyl alcohol to disinfect them between trees.
- Remove and dispose of any diseased wood and leaves.

DECIDUOUS SHRUBS

Prune both evergreen and deciduous foliage shrubs in the fall or spring before new growth starts. Minor corrective pruning can be done at any time. Pruning for most mature deciduous shrubs consists of thinning, gradual renewal, and rejuvenation:

Thinning cuts are used to maintain a shrub's desired height and width

- Thin out the oldest and tallest stems first. Use hand pruners, loppers, or a saw, rather than hand or gas shears.
- Gradual-renewal pruning involves annually cutting a few of the oldest and tallest branches back to slightly above ground level. Some thinning may be necessary to shorten long branches or maintain a symmetrical shape.
- To rejuvenate an old, overgrown shrub, remove one-third of the oldest, tallest branches at or slightly above ground level before new growth starts



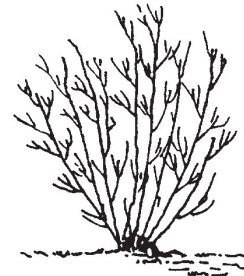
Before Thinning



After Thinning



Before Pruning for Renewal



After Pruning for Renewal

OLD GROWTH BLOOMERS

Time pruning of flowering shrubs to minimize disruption of blooming. Spring-flowering shrubs bloom on last season's growth. Prune them soon after they bloom so there is time for vigorous summer growth, which provides flower buds for the following year.

SHRUBS THAT BLOOM ON LAST SEASON'S GROWTH

BOTANICAL NAME	COMMON NAME
<i>Cercis chinensis</i>	Chinese redbud
<i>Chaenomeles japonica</i>	Japanese quince
<i>Daphne</i> spp.	Daphne
<i>Forsythia</i> spp.	Forsythia
<i>Kerria japonica</i>	Kerria
<i>Lonicera</i> spp.	Honeysuckle
<i>Philadelphus</i> spp.	Mockorange
<i>Pieris</i> spp.	Andromeda
<i>Rhododendron</i> spp.	Azalea and rhododendron
<i>Rosa</i> spp.	Rambling rose
<i>Spiraea</i> spp.	Early white spirea
<i>Syringa</i> spp.	Lilac
<i>Viburnum</i> spp.	Viburnum
<i>Weigela florida</i>	Old-fashioned weigela

NEW GROWTH BLOOMERS

Some shrubs that bloom after June do so from buds formed on that spring's shoots. Prune these shrubs in late winter to promote vigorous spring shoot growth.

SHRUBS THAT BLOOM ON THIS SEASON'S GROWTH

BOTANICAL NAME	COMMON NAME
<i>Buddleia davidii</i> or <i>globosa</i>	Butterfly bush
<i>Callicarpa japonica</i>	Japanese beauty bush
<i>Caryopteris x clandonensis</i>	Bluebeard
<i>Hydrangea arborescens</i>	Anabelle Hydrangea
<i>Hydrangea paniculata</i>	Panicle Hydrangea
<i>Hydrangea hypericum</i> spp.	St. Johnswort
<i>Rosa</i> spp.	Bush rose
<i>Spiraea bumalda</i>	Anthony Waterer spirea
<i>Symphoricarpos</i>	Coralberry and snowberry

EVERGREEN SHRUBS

A thinning-out type of pruning is the best way to prune most mature evergreen shrubs. Some evergreens can be sheared to achieve a stiff, formal appearance. However, you'll still need to thin them occasionally.

HEDGES

Hedges are plants set in a row so they merge into a solid linear mass. They have been used for centuries as screens, fences, walls, and edgings. A well-shaped hedge is no accident. It must be trained from the beginning. Beginning trimming after plant has been given a year or two to establish.

Start shaping as the individual plants merge into a continuous hedge. Do not trim too closely because many needle-bearing evergreens do not easily generate new growth from old wood.

Hedges often are shaped with flat tops and vertical sides. This unnatural shaping seldom is successful. The best shape, as far as the plant is concerned, is a natural form—a rounded or slightly pointed top with sides slanting to a wide base. This shape aids in shedding snow, which otherwise can break branches. Also, by trimming the top narrower than the bottom, sunlight can reach all of the leaves. Before shaping a hedge, try to think about the plants' natural shape and match it as closely as possible.

Two questions often arise: "How often should this hedge be trimmed?" and "When should I trim?" Answers depend on the kind of shrub, the growing season, and the degree of neatness you desire.

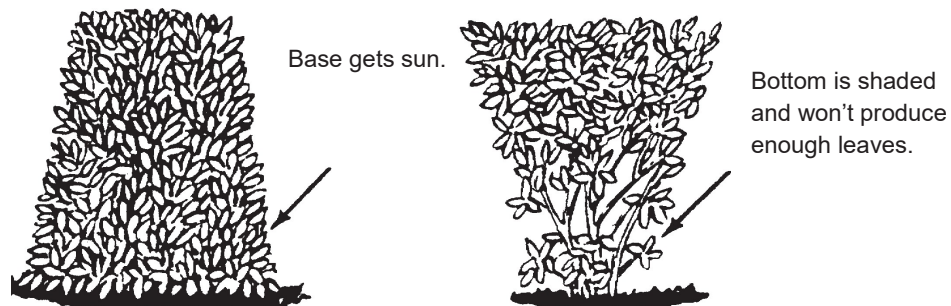
In general, trim before new growth begins to shade lower leaves. Trim slow-growing plants such as boxwood when new growth is more than 3 or 4 inches long. Yews, for example, may need shearing only once annually. Shear faster growing evergreens before new growth exceeds a foot in length. What can be done with a large, over-grown, bare-bottomed, and misshapen hedge?

If it is deciduous, the answer is fairly simple. In spring, before leaves appear, prune to 1 foot below the desired height. Then trim carefully for the next few years to give it the shape and fullness desired. Occasionally, hedge plants in very poor shape do not recover from this treatment and must be replaced. Rejuvenating evergreen hedges is more difficult.

As a rule, evergreens cannot stand severe pruning. Arborvitae and yews are exceptions. Other evergreen hedges may have to be replaced.



Straight lines take more maintenance than rounded, natural shapes. Snow load also causes more strain on plants with a straight top.



ROSE BUSHES

All rose bushes need some type of pruning. If they are not pruned for several years, they deteriorate in appearance, often develop more than the usual disease and insect problems, and produce smaller and smaller flowers. Proper pruning encourages new growth from the base, making the plant healthy and attractive and resulting in large blossoms.

Hybrid Tea, Grandiflora, and Floribunda roses require annual pruning in the spring after winter protection is removed. As a guideline, prune roses when the forsythia blooms. If you prune too early, frost injury may make a second pruning necessary.

For small pruning jobs, the only tools necessary are sharp hand pruners and gloves. If canes are large, loppers and a small saw with pointed blade are helpful. Use loppers to reach in and cut out large dead canes.

Remove all dead and diseased wood by cutting at least 1 inch below the damaged area. Remove all weak shoots and those growing toward the center. If two branches rub or are close enough that they will do so soon, remove one. On old, heavy bushes, cut out one or two of the oldest canes each year.

Cut back the remaining healthy canes. The height to which a rose should be cut depends on the cultivar. The average pruning height for Floribundas and Hybrid Teas is between 12 and 18 inches, but taller growing Hybrids and most Grandifloras may be left at 2 feet. Make cuts at a 45 degree angle above a strong outer bud. Aim the cut upward from the inner side of the bush to push growth outward and promote healthy shoots and quality flowers.

VINES AND GROWDCOVERS

Pruning procedures for ornamental vines are similar to those for ornamental shrubs. Be sure to prune flowering vines at the right time. Prune those that flower on new wood before growth begins in spring. Prune those that flower on last season's growth immediately after flowering.

Prune vines that are grown for foliage to control growth and direction. Timing is less critical than for flowering vines.

Groundcover plants require very little pruning. Remove dead or damaged stems whenever you notice them. Some trailing groundcovers, such as English ivy, may need pruning to prevent encroachment on lawn areas or other plants. The appearance of St. John's wort, a woody, yellow-flowered groundcover, is improved by trimming it back every 3 or 4 years in early spring.

TOOLS & TOOL MAINTENANCE

HAND PRUNERS

Hand pruners are good for branches up to ½ inch in diameter. If you use them to cut larger branches, you risk making a poor cut and/ or ruining the shears.

There are two styles of hand shears: scissor-action types and anvil-cut types

BYPASS OR SCISSOR-ACTION SHEARS have a thin, sharp blade that slides closely past a thicker, but also sharp, blade. This type usually costs more, but makes cleaner, closer cuts.

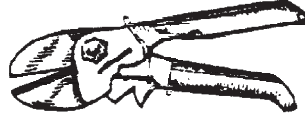
ANVIL-CUT SHEARS have a sharpened blade that cuts against a broad, flat blade.

LOPPERS

Loppers have long handles and are operated with both hands. Even the cheapest can cut ½-inch diameter material. The better ones can slice through branches 2 inches or more thick, depending on species and condition. For example, pin oak wood is tougher than that of linden, and dead wood is tougher, until decay sets in, than live wood.



Bypass Pruners



Anvil Pruners

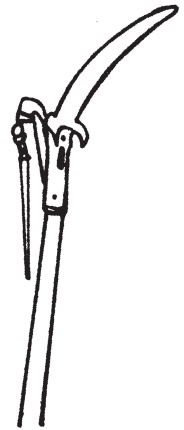


Loppers

POLE PRUNERS

Pole pruners have a hooked blade above and a cutting blade beneath. The blades are on a pole and are operated by pulling a long piece of cord downward.

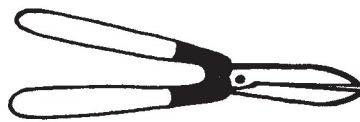
The poles can be in sections, which either fit together or telescope. They can be made of several materials. Wooden poles are heavy. Aluminum poles are light, but can conduct electricity if they touch an overhead wire. Poles made of fiberglass or a plastic compound probably are best. Poles can be fitted with saws. Pole pruners can be dangerous, as material that is cut overhead can fall on the operator, unless it hangs up in other branches. Use caution and wear head and eye protection when using these tools.



HAND SHEARS & GAS SHEARS

Hand shears have long, flat blades and relatively short handles, one for each hand. Heavy-duty shears with one serrated blade are good for difficult jobs.

Gas powered shears are mainly used for hedges or special purposes. They should not be used on a plant unless you are specifically directed too. It may seem easier in the short run, but they can cause damage that make take a significant amount of time to fix or may be irreversible.



Hand Shears



Gas/Electric Shears

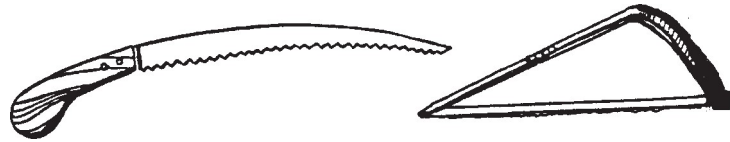
SAWS

There are many makes and models of hand pruning saws. Fineness of the cutting edge is measured in points (teeth per inch). Average saws are about 5½ to 6 points. An 8-point saw is for delicate, close work on small shrubs and trees, while a 4 ½-point saw is for fairly heavy limbs.

If a saw suddenly folds while in use, it can injure the operator's fingers. Folding saws have either a slotted-head holding screw or a wing nut that secures the saw blade open or closed. However, a fixed-blade saw with a leather scabbard is safer.

Saw blades can be either straight or curved. Many people prefer a curved blade that cuts on the draw stroke.

Chain saws come in a variety of sizes. However, in general, chainsaws are not appropriate for pruning live plant material. They are better suited to removing trees and cutting firewood.



Hand Saw

Bow Saw

CARING FOR TOOLS

Clean and oil tools regularly by wiping down blades and other surfaces. Keep cutting edges sharp. Several passes with a good file usually suffice. Gas shears need to have their mechanisms greased regularly with a grease gun.

Use tools properly. Don't twist or strain pruners or loppers. Keep the branch to be cut as deeply in the jaws and near the pivot as possible. Don't cut wires or other non-plant objects with pruning tools.

PRUNING TERMINOLOGY

APEX—The tip of a shoot.

APICAL DOMINANCE —The influence of a growing shoot tip on the buds and shoots below it. The shoot tip produces hormones that move with gravity toward the earth. This chemical message prevents growth of most lateral buds below the tip and reduces growth of lower shoots. This effect is inhibited if a branch is growing horizontally.

BUD—An undeveloped shoot, leaf, or flower, or a combination of leaves and flowers, formed on the sides or ends of shoots and in leaf axils (the angle formed where a leaf joins a shoot).

COLLAR—A swollen area at the base of a branch where it connects to a trunk. Contains special tissue that prevents decay from moving downward from the branch into the trunk.

CROTCH ANGLE —The angle formed between the trunk and a main scaffold limb. The best angle is 45 to 60 degrees.

HEAD—The part of a tree from which the main scaffold limbs originate.

HEADING—Cutting off part of a shoot or limb rather than removing it entirely where it attaches to another branch.

LEADER—The uppermost portion of a scaffold limb. The terminal is the tip (apex) of the leader.

ROOT SUCKER—A shoot that arises from the root system.

SCAFFOLD LIMB—A large limb that forms the framework of a tree.

SHOOT —One season's branch growth. The bud scale scars (ring of small ridges) on a branch mark the start of a season's growth.

SPUR—A short shoot that bears flower buds and often fruit, either on the end (terminally) or sides (laterally).

THINNING—Removal of an entire shoot or limb where it originates.

WATER SPROUT—A long shoot that grows in an undesirable location on a trunk or a major limb. Vertical water sprouts often arise on the upper side of horizontal limbs.