Pruning

the

Home Orchard

Cooperative Extension Service

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Pruning the Home Orchard

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Reasons for Pruning Fruit and Nut Trees

- Pruning stimulates shoot growth, especially near the cuts.
- Pruning reduces overall tree size.
- Pruning makes trees easier to spray and harvest.
- Pruning young trees can improve structural strength and induce branching.
- Pruning mature trees can increase their production and improve the fruit quality.
- Pruning reduces the need to prop up the fruit-laden branches.

General Rules for Pruning

- Prune all fruit and nut trees at planting time to balance the tops with the roots. Cut just above the height where the lowest branches are desired.
- Prune young trees very lightly.
- Prune mature trees more heavily, especially if they have shown little growth.
- Prune the top portion of the tree more heavily than the lower portion.
- Prune when all danger from fall or early winter freeze has passed, but before full bloom in spring.
- When removing large limbs, first cut part way on the underside, then cut flush with the main limb. Do not leave stubs.
- To keep a tree small, prune moderately every year and do not apply fertilizer, manure, or compost. (This does not apply to “dwarf” trees.)
- To reduce the height of an old tree, cut back the main limbs to a vigorous side limb, even if it is necessary to cut 2 or 3 feet lower than desired. The stubs will not heal over.

Wound Dressings

Wound dressings are not necessary except when saw cuts are more than 2 inches in diameter. Various asphalt-emulsion and other types of wound sealing compounds are available at garden and hardware stores. It is better to leave a wound unpainted than to use a paint developed for another purpose, which might be toxic to live tree bark.

The following formula makes an inexpensive, durable, wound paint, which is an excellent
Cuts made flush with a main limb heal quickly.

fungicide: 2 pounds venetian red, 0.3 pound neutral copper (for fungicidal action—Tri-basic copper sulfate), and 0.1 gallon of raw linseed oil may be required. This mixture should make a thick paint which would thin somewhat if allowed to stand overnight. It should be applied with a stiff-bristled brush and worked well onto the cut. Powdered bourdeaux mixture combined with raw linseed oil makes another excellent wound paint. The usual mixture contains 1 pint of raw linseed oil stirred into 1 pound of bourdeaux powder. The paint should be stored in a nonmetallic container.

Fruiting Habits

One-year-old wood is wood that grew during the previous summer. Peaches bloom only on one-year-old wood, while apples usually bloom only on spurs or short shoots from two-year-old wood. Peach on the left; apple on the right.

The fruit spurs on a mature apple tree bear the fruit crop. Because peach and apricot trees bear only on one-year-old wood, they require more annual pruning than do apple and pear trees. Cherries and prunes require relatively little pruning.
Training Systems

This peach tree has been trained to an *open center*.

This apple has been trained to a *central-leader* system.

The tree above has *scaffold limbs* with *narrow angled crotches*. The *crotch angle* is the angle between a side limb and the main trunk. Since narrow crotches are subject to splitting, this tree had to be wired together to prevent breakage of limbs.

This structurally strong tree has scaffold limbs with *wide-angled crotches*. Its crotch angles were determined in the first few years after it was planted. This tree would hold a heavy fruit load without wire supports.
Thinning out is illustrated on the left and cutting back or "stubbing" on the right. Thinning-out pruning results in long, flexible limbs that bend down when loaded with fruit. Cutting back or stubbing causes limbs to branch and stiffen; this type of pruning increases the formation of new shoots.

Long-handled pruning shears are the most useful tool for almost all pruning jobs. Hand shears are useful in the training of young trees. If many large cuts are to be made, a pruning saw should be used. Step ladders should be sturdy and set firmly on the ground to prevent accidents.

Apple Trees

Fully dwarf apple trees

Fully dwarf apple trees must be supported in some way or they will bend to the ground under the weight of their fruit. The central trunk may be supported by the side of a house or a fence by using adjustable eye-bolts or turnbuckles and wires. If individual posts are used, they should extend at least 4 feet above the ground. Wood posts should be 3 inches or more in diameter. Dwarf apple trees may be grown on a post-and-wire trellis in a hedgerow. Posts may extend from 6 to 10 feet above the ground. Treated fence posts are best, but untreated 4 x 4 cedar posts are satisfactory. Heavy wire, preferably galvanized, should be used. About one-third of the post should be in the ground. The lowest wire should be about 4 feet above the ground with higher wires at 3-foot intervals or spaced as desired. Tie the main trunk to these wires with galvanized wire, using a loop big enough to allow the trunk to grow without being girdled. Strong twine or rope, tied with enough slack to allow for growth, may be used instead of wire.

Fully dwarf apple trees should be trained to a central leader. (See illustration on page 5.) When trained to a central leader, and given support from a post or trellis, they will make highly productive 6-, 8-, or 10-foot trees. If not trained in this manner, the weight of the fruit will bend the trees down so that they make a bush-like tree only 4 or 5 feet tall. At planting, cut back fully dwarf apple trees just below the first wire of a trellis or at 24 to 28 inches above the ground.

Allow the topmost shoot to form the central leader. After the lower shoots have grown a foot, the new summer growth at the tips should be pinched off 1 or 2 inches. This will suppress their growth and cause them to branch.
Methods of tying up the branches of fully dwarf apple trees.

This side limb has grown for two summers. It was pinched back each summer. Pinching also helped to induce fruit spur formation.

Semi-dwarf apple trees

A semi-dwarf apple tree may be trained to a central leader or allowed to become an open-center type of tree. If it is trained to a central leader, it may be necessary to remove the fruit from the central leader shortly after blossom time for the first 2 years. Otherwise, the weight of the fruit will bend the central leader over and stunt the tree. A sturdy stake should be used for support in the first 10 years.

Open-center trees may need support. Nursery whips should be cut off about 3 feet above the ground level to establish the main branches at a sufficient height. The tree should be allowed to develop no more than four main scaffold limbs. As the tree begins to bear fruit, each limb may require a prop or a stake tied to a central post.

“Spur-type” apple trees

In recent years, apple trees have been developed with a habit of growth slightly different from that of the familiar standard varieties.

These new trees form many small spurs on young growth rather than the usual long shoots
and leaf buds. This is why they are called “spur-type” trees.

Each spur bears a flower cluster. The leaves are close together, the tree branches are less frequent, and the tree grows slowly. Because these trees are smaller than the standard strains of the same variety, and fruit at a young age, they make ideal home-orchard trees. Some “heading back” or “stubbying” may be required to induce branching. If they are grown on vigorous rootstocks, spur-type trees may not require artificial support until they are in production. Spur-type trees are available on both vigorous and dwarfing rootstocks.

**Standard trees (full size)**

Apple trees should be cut back at 24 to 30 inches from the ground at planting time. Train the apple trees on nondwarfing roots to the open-center system. The center limbs should be left in place until fruiting begins, and then should be gradually removed. It is desirable to have only four main scaffold limbs, equally spaced around the trunk and vertically spaced several inches apart. (See the photograph on page 5.)

The branches of a mature nondwarf apple tree may spread over an area 40 feet in diameter and reach a height of 30 or 40 feet. Regular pruning, especially in the top limbs, is required to maintain a height low enough to permit spraying and harvesting. Most of the pruning should be limited to thinning and cutting back to the side shoots.

If a tree has not been pruned for several years, probably it will have a dense thicket of upright shoots in the top and many weak, pendulant spur systems further down. It should be pruned back into shape gradually over several years, rather than trying to do the whole job in one year. The upright shoots should be thinned out, leaving some of the smaller ones. The pendulant or nearly horizontal top limbs should be cut back to the more upright side limbs, gradually invigorating the spur systems by cutting back some and removing others. Limbs that rub against other limbs should be cut back. The center of the tree should be fairly free of limbs for better sunlight distribution.

**Pear Trees**

**Dwarf pear trees**

Dwarf pear trees should be trained to a central leader and support should be supplied as with dwarf apple trees. Remove 3 or 4 inches of the tip of vigorous shoots in the summer to promote branching.

**Nondwarf pear trees**

These trees should be grown to a central leader with four or five lower branches. Select these branches early and do little or no pruning except to suppress the central leader until the tree starts to bear. (See the illustration on page 6.) Cut back several inches of the very long shoots to induce branching. Thin out the branches of the mature trees and do the heaviest pruning in the tops. Remove the long shoots in the center and top, but leave some short shoots and most spurs. Cut back the slow-growing spur systems to about one half their length to invigorate them. On Anjou and Comice pear varieties, cut back most of the spur systems and some shoots to increase the size of the fruit.
Sweet Cherry Trees

At planting, nursery trees should be cut back at a height desired for scaffold branches. Cutting a foot or two above ground level will produce a shorter tree. Sweet cherry trees should be trained to the open-center system. The limbs of young sweet cherry trees often will grow 6 to 8 feet without branching. If a tree is growing very rapidly, pinch off 5 or 6 inches of new growth after about 2 feet of growth has been made in the summer. This will cause branching. To promote branching on slower-growing trees, cut back each branch in the winter. Mature trees require little or no pruning except that which might be required to reduce the tree height. Birds usually eat the top cherries. If the trees are lowered too much, the birds may eat the cherries you want.

Bacterial canker, a common disease of cherry trees, frequently causes gumming and dead areas or "cankers" on limbs. If gummy dead area encircles most of limb, the limb must be cut off.

Peach Trees

Peach trees should be cut off about 18 to 30 inches above the ground level at planting. Train peach trees to the open-center system. No more than three or four main scaffold limbs should be allowed to remain in the tree permanently. Select the scaffolds that make the widest angles at the point of attachment with the trunk. Peach limbs with poor crotches split out more frequently than limbs of many other fruit trees. Remove the excess scaffold limbs in the spring of the second year and again in the third year if necessary.

Peach trees bear only on one-year-old shoots. Sufficient pruning is required every year to stimulate new shoot growth for the following year's crop. Peach trees branch readily and have too many weak shoots unless they are pruned properly. Thin out the shoots, do not cut back. Prune hardest in the tops and near the ends of the major limbs. Cut the top limbs back to side shoots to stiffen them and reduce tree height. Peach trees crop more consistently and have larger fruits if they are pruned heavily.

Prune and Plum Trees

Prune and plum trees should be trained to the open-center system, with three or four main scaffold limbs. Prune very lightly for the first five years. Remove the excess scaffold limbs and do little else.

In the mature trees, thin out the tops every few years and remove the dead limbs as they appear. Most plums and prunes have ample bloom every year, and therefore only enough pruning is required to keep the trees fairly vigorous.

Walnut Trees

A newly planted walnut tree should be cut off 4 or 5 feet above the ground. Unless this is done, the tree will not grow much for several seasons. The lowest limbs of a walnut tree have a habit of drooping, so they should originate fairly high on the trunk.

Select three to five main scaffold branches in the first and second growing seasons and remove the excess branches at that time. After the scaffold branches have developed, no further pruning is required. Pruning will invigorate most old, weak walnut trees.
Filbert Trees

In nature, filberts grow as bushes, but, by annual removal of the sprouts that arise at ground level, they can be forced to grow in a single trunk. Prune several large limbs from the slow-growing old trees every four or five years. This stimulates shoot growth on which the crop is borne.

Apricot Trees

Apricot trees usually develop numerous branches in the nursery. Some of these may be selected for scaffold branches at planting time. Cut these branches back a few inches and remove other branches. Cut back long shoots one year after planting to induce branching. Pruning bearing apricot trees is mostly a process of thinning out the excess wood.

While you are at it, you may as well clean up the small fruits; they need pruning and attention too. See your county Extension agent for advice on pruning ornamentals.

Grapes

The most popular system for training American grapes is called the Kniffin system. It gives good production, is simple to use, and requires no tying during the summer. This system consists of a straight trunk with four arms or canes. Two canes on opposite sides of the trunk are left at the 30-inch level and two at a height of 54 to 60 inches.

In pruning, the idea is to limit the number of fruit-producing buds. This, in turn, limits the number and size of the clusters but increases the yield of fruit.

The middle buds on a grape cane produce more fruit than those at either end. The medium-sized cane will produce more and better fruit than either the weak or excessively strong cane.

Pruning should be done in the late winter or early spring after danger of severe freezing has passed. This would usually be late February or early March in western Oregon, and somewhat later in the higher, colder areas of the state.

The amount of pruning should vary with the vigor of the vines. A good method to guide a beginner would be: leave 30 to 40 buds for the first pound of the past season's wood removed and about eight buds for each additional pound removed. If irrigation is available and growing conditions very good, twice this number of buds can be left. A two-bud spur is left near each fruiting arm to produce a new arm for next year's crop.

In general, you prune weak-growing vines more than strong vines. The weak vine produces short-jointed wood, so there are more buds per pound of wood. Keep this in mind as you get acquainted with the different varieties and consider the best methods of pruning them.

Blackberries

New canes appear early in the spring, and, after growing upright for a time, turn down and run along the ground. To avoid injury to new canes, keep them trained in a narrow row beneath this year's bearing canes.

Remove old canes following harvest. Early blackberry varieties can be trained (tied in desired shape) in either fall or spring. Training within 10 days after harvest permits a fall spray, a gradual and better approach to dormancy, no tip rooting, a better dormant spray job, and less injury from training. In severe climates, fall training may leave canes more susceptible to freezing.

A good trellis can be made on posts set 30 to 40 feet apart and using two wires, one 5 feet high and the other 18 inches below it. Canes are wrapped one or two at a time in a spiral around the two wires, working each way from the plant. This allows for growth and a good spread of fruit-
ing arms during the next season. Save all lateral growth for highest yields.

Some growers train on one wire, in one or both directions. The ends of the canes may be cut off or left on. This method may result in broken wires, broken canes, and crowded canes.

Some commercial growers prefer to cultivate in both directions, and so train plants on stakes. They wind the canes around the stake, cutting excess tips off and tucking the ends in at the top of the stake. This method is useful in home-garden culture of trailing berries.

Another system is fan training. Under this system, plants are set close together and canes are tied up one or two in a place, fan style, on a 3- to 5-wire trellis, cutting off the tips just above the top wire. This system requires more labor, but in return it gives a higher yield of fruit.

Two- and four-wire horizontal systems are also used. A single set of wires may be 4 or 5 feet high, or one set there and another 2 feet below them. Wood crossarms are placed on the wires and canes are trained on them. Sometimes bearing canes are on the top wires and new canes are trained on the lower wires instead of on the ground.

Red raspberries

Red raspberry roots are perennial and should live for many years. The tops of the one-crop varieties are biennial in habit, growing one year and producing the following year. Fruit-bud formation starts at the tip of the cane about July, after most of the cane growth has stopped, and will continue downward until the end of the growing season. The fruiting laterals coming from tip buds are shorter and produce fewer and smaller berries. This is one reason for removal of tip growth at pruning time.

Fall-bearing varieties stop growth in mid-summer, differentiate tip fruit buds, develop flowers, and fruit rapidly. Bud formation does not develop downward rapidly, so the lower buds develop and fruit in the spring.

Most of the buds develop flowers and fruit, so any pruning will reduce the number of fruits produced. The object in pruning is to remove weak canes and tips of canes so that the strong growth left will produce a maximum of large berries. This also helps produce a strong new growth for the next year.

Prune in late summer, in winter, or in early spring. Shortly after harvest, the canes which have fruited and weak growth can be removed. Late winter or early spring is the time for the main pruning operation. At this time, remove weak canes and any excess of the longer canes. Usually 10 to 12 canes are enough for maximum production. Tips of these canes are usually removed to a height of 5 to 6 feet. The type of pruning depends on the training system.

Black raspberries

Black raspberry plants produce from 3 to 12 arching canes. By pinching these canes back, you get many side branches that will produce fruit. Where no support is used, a low heading at about 15 to 17 inches will force out a strong low plant. This may require several trips over the field, cutting or pinching off 3 to 4 inches of the tender tops as they reach the desired height.

Some growers prefer high heading at 30 to 42 inches to make picking easier. Heading is done just before berry harvest. These tall plants usually are supported with a strong stake for each plant or by wire trellises, with posts set every 20 to 30 feet.

Remove old fruiting canes and cut back new branch canes or laterals in January, February, and March. The length to leave depends on vigor of the plants. Strong laterals may be left 12 to 18 inches long, while weak ones may be cut to 3 to 4 inches.

Pruning wood can be left on the ground between the rows if a heavy disc or rotary tiller is available to break it up and work it into the surface soil.

Currants and gooseberries

Red and white currants should have all weak shoots removed at the end of the first year, leaving about six or eight strong shoots to form the plant. At the end of the second year, leave four or five of the two-year-old shoots and three or four one-year-old shoots. At the end of the third year, leave about three shoots for each year's growth.

Fruit is borne at the base of one-year-old wood and on spurs of the older wood. The two- or three-year-old wood produces best. After three years, pruning consists of removal of older canes and replacement with new ones.

Varieties that tend to spread and droop should have outer growth removed to keep the fruit off the ground. Varieties that grow more upright are thinned to give the fruit more room to develop.

In general, gooseberries are pruned much the same as currants. Fruit is produced on one-year-old wood and one-year-old spurs, with three-year-old canes being the most productive.