A1959

Pruning Apple Trees

T.R. Roper

Flowering, fruiting and providing cool shade, apple trees can be a pleasing addition to the home landscape. However, unlike most shade trees, apple trees require some pruning every year for the life of the tree. This publication describes how to train young trees and prune mature apple trees for years of high quality fruit production.

Why Prune?

Pruning has many advantages. Done properly, pruning opens up the structure of the tree, allowing more light to reach the center for uniform high quality fruit production. It also helps keep apple trees conveniently sized for harvesting fruit, pruning and pest control.

Pruning increases the vigor of the remaining portion by altering the root/top ratio—favoring the tops by increasing the availability of stored food reserves, mineral nutrients and water. In other words, the same amount of roots serve a smaller top after pruning, resulting in more vigorous growth. However, trees that are pruned severely will be too vigorous and will produce few fruit.

Left unpruned and untrained, apple trees grow many upright branches and produce few, small fruit of poor quality. In addition to being unproductive, these trees have unattractive shapes.

What's Involved?

Since no two trees are exactly alike, the amount of pruning required by an apple tree depends on the cultivar, the location, the amount of space allotted, the type of rootstock and the tree's pruning history. The most important point to remember when training and pruning apple trees is that light is required to produce high quality fruit. No portion of the tree should be shaded during the entire day. Fruit produced in shady portions of the tree will be small, poorly colored and of poor quality.

Rootstocks influence both the size of apple trees and the amount of pruning required. Dwarf and semi-dwarf trees require less pruning to keep trees in their allotted space than standard apple trees because they don't produce as much growth. Trees on dwarfing rootstocks also produce fruit at a younger age than standard trees.

Most pruning can be done with a pruning saw and shears. Use tools made specifically for pruning and keep them sharp and clean. Good pruning tools should cut clean and close with a minimum of effort and damage to the tree.

Pruning should be done while the tree is dormant. The best time is in the late winter to early spring. This means March and early April in most of Wisconsin. Do not prune in the fall or early winter. Fall pruning causes trees to be more susceptible to winter injury.

Training Young Trees

The objective in training a young tree is to develop a structure that will provide a strong framework, allow maximum light penetration and promote high quality fruit production. Training a tree properly during its first few years can save many hours of difficult, corrective pruning as the tree ages.

The central leader system of training described in this fact sheet produces a vertical central or main stem and strong, properly spaced scaffold or framework limbs which grow about 30° above horizontal (see Figure 1). This system is easy to prune and provides optimum production potential.

Terms Used in This Publication

Heading cut—To remove a portion of the length of a branch.

Leader—The main trunk which extends vertically through the center and forms the top of the tree.

Pruning—Cutting off unwanted or undesirable branches.

Scaffold limbs—Lateral branches arising from the main trunk or leader, forming the framework of the tree.

Spur—A short branch, not more than a few inches long.

Sucker—A rapidly growing shoot arising from the roots or rootstock.

Thinning cut—Removing an entire branch at its point of origin on the trunk or scaffold.

Training—The art of causing trees to grow to a desired shape or form.

Water sprouts—A rapidly growing shoot, usually unbranched, growing on the trunk or scaffold limb.

Prune apple trees at planting, then annually while the tree is dormant, until you establish the desired framework. If you plant unbranched whips, cut off the top leaving the tree 30 to 36 inches tall. Side branches will grow from the whip the first year. If branched trees are purchased, limbs will be in place already. Remove only broken, damaged or poorly positioned limbs on branched trees at planting.

Over the years, you will train two tiers of scaffold branches. Select scaffold limbs from the side branches as soon as possible. These branches will form the central framework of the tree and should grow at a wide angle from the leader. Limbs with wide crotch angles will be stronger and more fruitful than upright branches with narrow crotch angles.

If necessary, you can create a wide crotch angle on an upright-growing limb by using a small piece of wood to spread the branch during the first year or two (see Figure 2). Cut a notch in each end of a piece of lathe or similar wood. Place the "spreader" between the central leader and the scaffold limb—this will push the limb into the proper position.

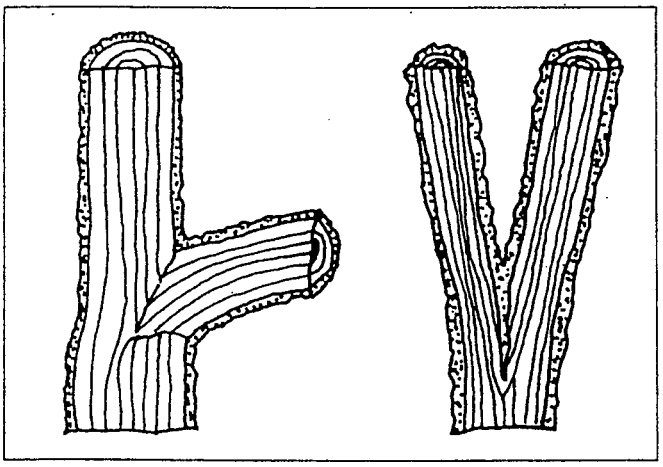


Figure 1: Right—strong crotch *Wrong—weak crotch*

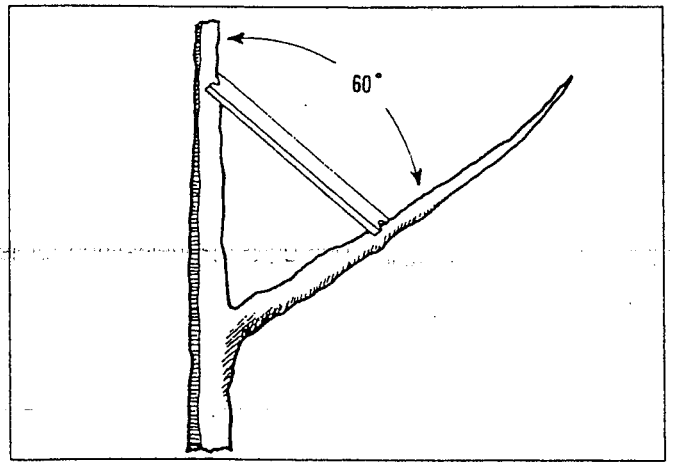


Figure 2: A piece of wood used as a "spreader" to create a wide crotch angle in an upright-growing limb.

During the first summer, choose four or five good branches for the lowest tier of scaffolds. The lowest scaffold limb should be at least 24 inches above ground. Limbs growing below that point make it difficult to work around the tree. Select well-spaced branches growing within about 18 inches of the lowest scaffold that are growing neither exactly opposite nor directly above one another (see Figure 3). For the first dormant pruning, remove weak or poorly positioned limbs that will not become scaffolds and cut off the central leader 8-12 inches above the uppermost scaffold limb.

After two or three years, select a second tier of scaffold limbs. Again, choose branches with wide crotch angles from the trunk. The lowest branch of the second tier should be at least 24 inches above the top branch of the lower tier. This 24-inch gap allows light to penetrate into the canopy and strike the lower tier of branches. The upper branches must be kept shorter than the lower branches so as not to shade the lower branches. This will give the tree a "Christmas tree" shape.

Keep the leader dominant or taller than all side branches until you've selected all scaffolds, usually four to five per tier. Once you've chosen the scaffolds, cut the leader off just above the uppermost scaffold limb.

Remove all dead and broken branches annually, as well as suckers, water sprouts, and branches forming narrow angles. By the fifth year, trees should be well established with two tiers of scaffolds. Spurs should be developing throughout the tree to provide annual fruiting.

Pruning Bearing Trees

The objective of pruning bearing trees is to maintain maximum production of high quality fruit on a continuing basis. Properly trained trees require little pruning but must still be pruned annually. Limit pruning of bearing apple trees to removal of weak, unproductive branches to improve light penetration and distribution, reduce tree height, and improve spray chemical coverage.

As trees grow older, you may need to make more thinning cuts. Don't let the upper branches grow longer than the lower branches. Long upper branches shade lower branches and reduce productivity. If necessary, head upper branches into 2-year-old or older wood to keep them shorter than lower branches. Thin out weak, unproductive branches, and keep the tree "open" for good light penetration and distribution.

If an older tree is too tall for convenient spraying and harvesting, more drastic steps must be taken. To lower the height of a tree, completely remove one or two of the tallest growing limbs. Make the cut where the limb joins the trunk. When you prune drastically, you must greatly reduce other pruning in the tree that year. Over-pruning will stimulate too much growth and lower fruit production. Spread out extensive renovation pruning over 2 to 3 years.

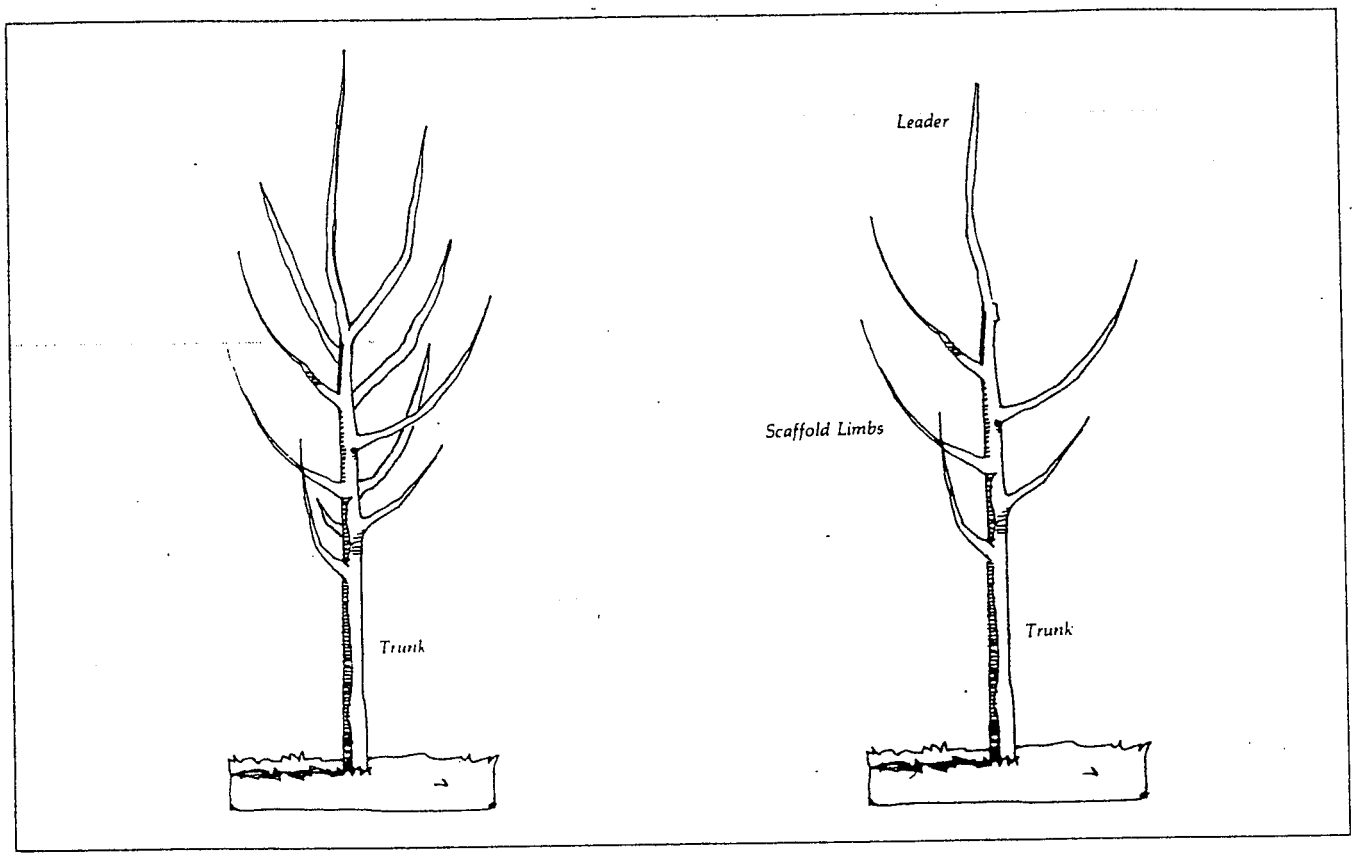


Figure 3: Young apple tree after growing one year in the orchard.

The same tree after all but desired future scaffold limbs have been removed.

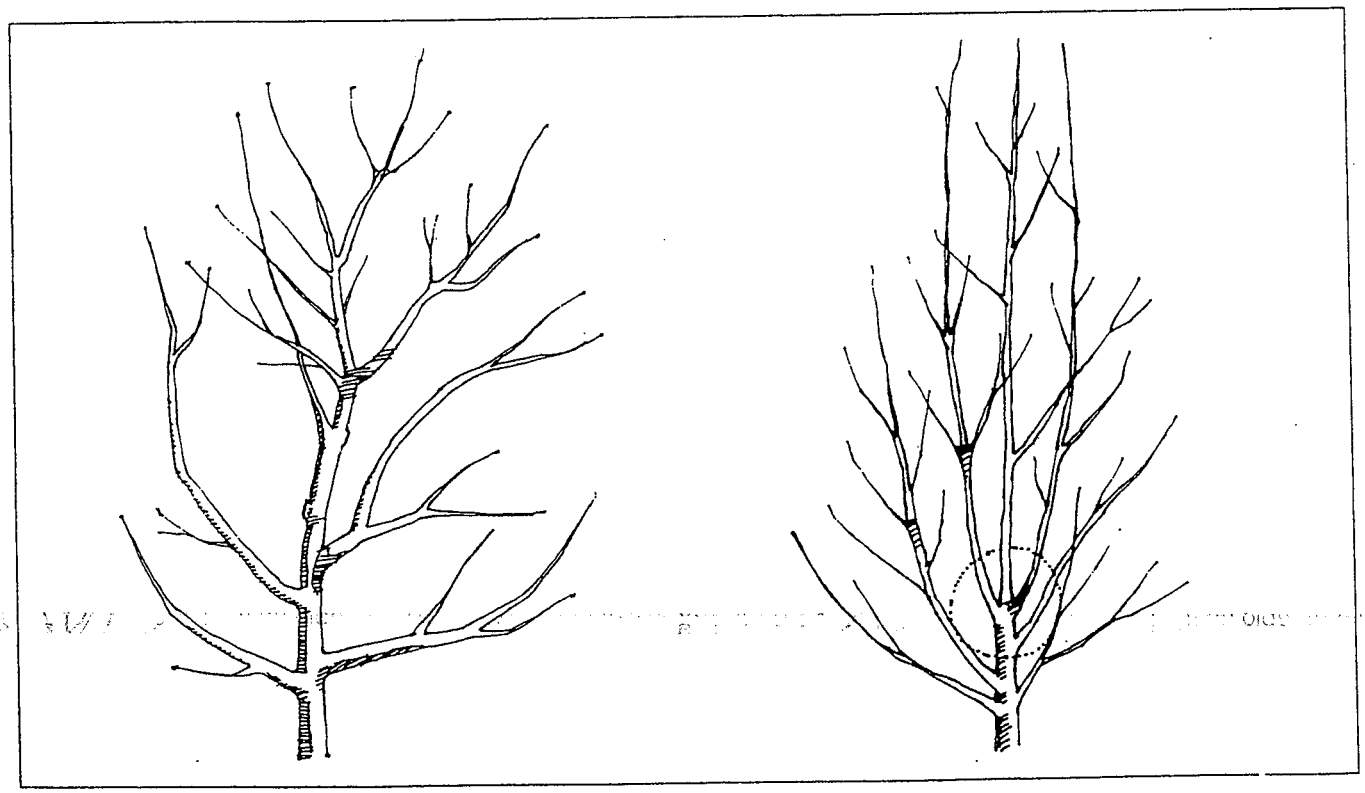


Figure 4: A well-trained six-year-old tree. Note the sturdy, well-spaced scaffold limbs.

A poorly-trained young tree. Note the cluster of close, narrow-angled scaffold limbs, and three central aders.

Pruning Procedure

To prune efficiently, follow these steps:

1. Cut off water sprouts growing on the trunk and scaffold limbs. Occasionally, a water sprout may be left to fill in an open area.
2. Remove broken and diseased branches.
3. Remove the weakest of crossing or closely growing parallel limbs.
4. Remove all limbs or spurs growing downwards.
5. If the tree needs more branch thinning, remove weak, spindly ones first. Remove dense or long growth from the upper portions of the tree which shade lower limbs. Limbs growing within hand's reach are easier to harvest and spray.

Remember

- O Light is required for quality fruit.
- O Prune during the dormant period, late winter or early spring. March and April are best.
- O Use tools made specifically for pruning and keep them sharp and clean.
- O Make all cuts smooth and close. Leave the collar but not a stub (see Figure 5).
- O On cultivars that bear heaviest on alternate years, do heavy pruning just before the bearing season.

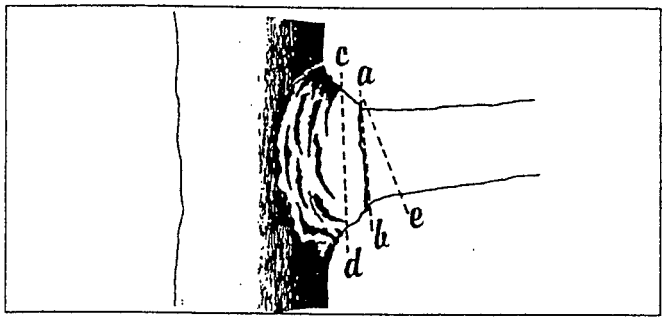


Figure 5: Collar cuts (line a-b) should be used rather than flush cuts (line c-d). Collar cuts heal over quickly—stub cuts (line a-e) do not.

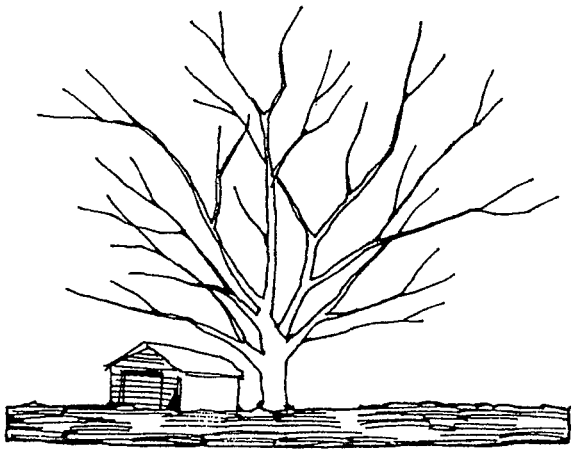
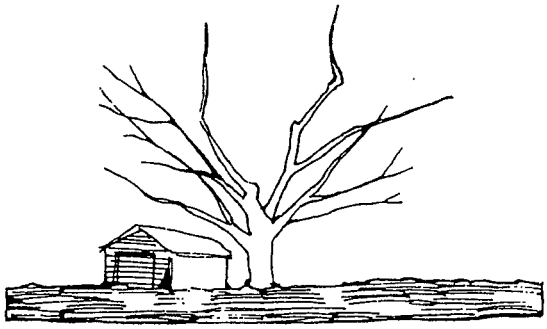


Figure 6: A twenty-year-old McIntosh growing too tall for convenient spraying and harvesting.



The same tree after reducing the height. The tallest limbs have been removed at the point of origin. Enough branches remain to provide shade and prevent sunscald of the exposed limbs.

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