

# Training Young Apple Trees to the Modified Central Leader System

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Guide H-306

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Prune the young apple tree to develop a strong framework and a desirable form for easy spraying and harvesting. Heavy pruning dwarfs a young tree and delays bearing. Unpruned, young trees often develop multiple trunks near the base and many narrow-angled, weak crotches between the main scaffold branches and the trunk.

Research and experience have shown the central leader or the modified-leader system of training best in the Southwest. Plant one-year-old, unbranched trees,  $\frac{5}{8}$  to  $\frac{3}{4}$  inch (1.5 to 2 cm) in trunk diameter and 4 to 6 feet (1 to 2 m) high. Remove terminal buds to prevent development of multiple leaders, and to accelerate lateral development.

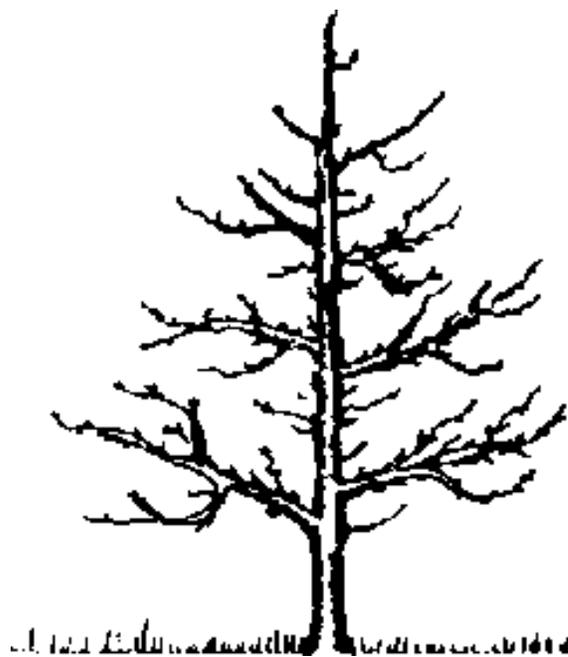
Allow all new shoots to grow until mid-June the first season. At this time, start selecting the primary scaffold branches. A well balanced tree

should have four primary scaffolds spaced 8 to 10 inches (20 to 25 cm) apart vertically around the trunk, each occupying a quarter section of the tree. The lowest lateral should be 18 to 24 inches (46 to 60 cm) above ground.

Remove all shoots except those selected for scaffolds and the leader. Enough branches may not develop for all scaffolds at this time. You can select scaffold branches the following spring and



*The four-year-old spur Red Delicious tree was not pruned when set, nor has it been pruned since. Without training, the semi-dwarf and spur strains often develop trunks and scaffold branches similar to these. Multiple-trunk trees often split apart under heavy loads of fruit as they reach peak production.*



*Some growers prune dwarf apple trees to the strong central leader system. Note the four tiers of scaffold limbs. If the bottom pair of limbs point north and south, the second pair should point east and west so as not to be directly above the lower set. The third tier of limbs should be almost over the first tier at the bottom, and the fourth tier above the second. Excessive shading will not occur, because of the distance between tiers.*

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during the second summer, or until enough branches have developed. Laterals selected during the first growing season usually produce strong, wide-angled branches.

If you plant branched one- or two-year-old trees, you can select one or more wide-angled and properly positioned scaffolds at planting. Remove all laterals not suitable for scaffolds. Cut back the scaffolds selected at planting to one-half the length of the portion of header above it.

If you do not select scaffold branches during the first summer, or if it becomes necessary to change the framework of the tree, select scaffold branches early in the second spring. The four primary scaffolds plus the central leader constitute the permanent framework of the tree.

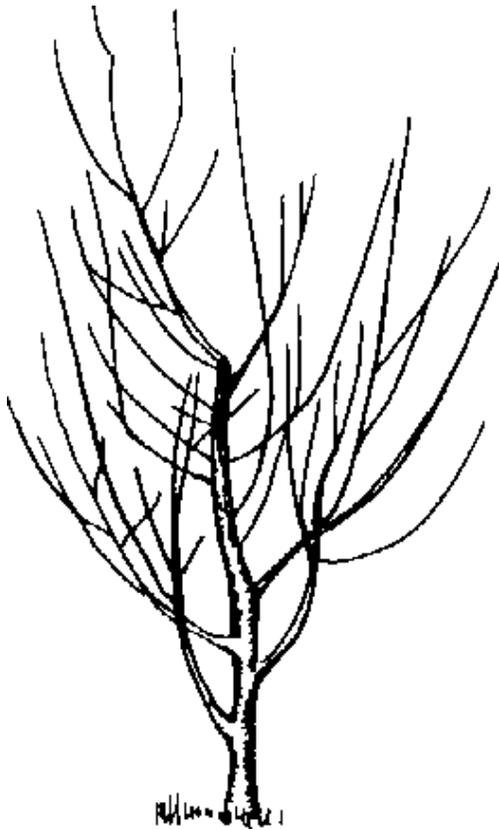
Branches that form wide angles with the leader and are spaced ideally around the trunk seldom develop. So growers usually have to use branches spaced closer than the ideal spacing, and choose limbs that form acute angles rather than wide

angles. Spreaders help to increase the crotch angle of a limb if they are installed before the tree begins to bear.

After selecting the permanent branches, leave short temporary shoots along the trunk to provide additional leaf surface and prevent sunscald. Prune these shoots to a length of 8 to 16 inches (20 to 40 cm). Remove them which they begin to interfere with the permanent branches.

After the primary scaffolds are selected, cut the leader back 12 to 18 inches (30 to 45 cm) above the topmost scaffold. A side shoot near the cut will develop into a modified leader, from which two or three "secondary scaffolds" develop. This encourages the tree to spread, permitting more sunlight to reach the interior.

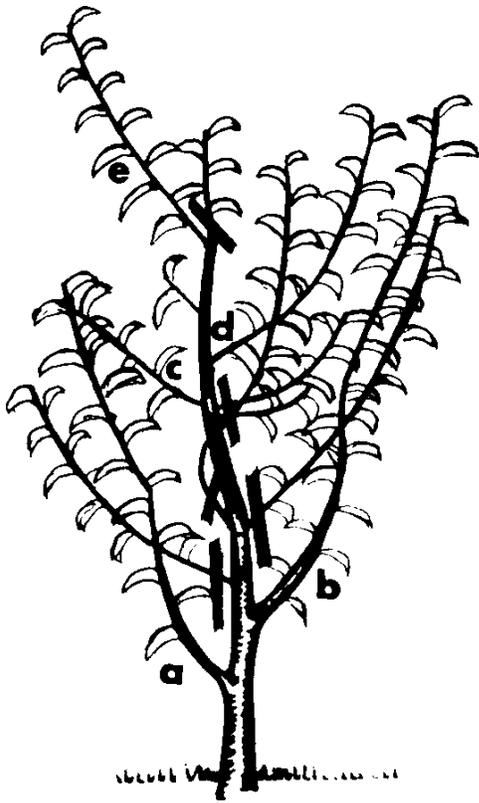
The central leader will continue to grow upright and produce laterals if not pruned. Trees trained to the central leader system develop wide angle branches and are less subject to limb breaking. Trees are cone shaped and are best suited to



*A young apple tree pruned to the modified central leader system. The top branch becomes the leader after the central leader has been removed.*



*A newly set, one-year-old apple whip. Remove the cluster of terminal buds at planting to avoid development of multiple terminals. This also encourages lateral bud break, essential in preventing sunburn on the trunk.*



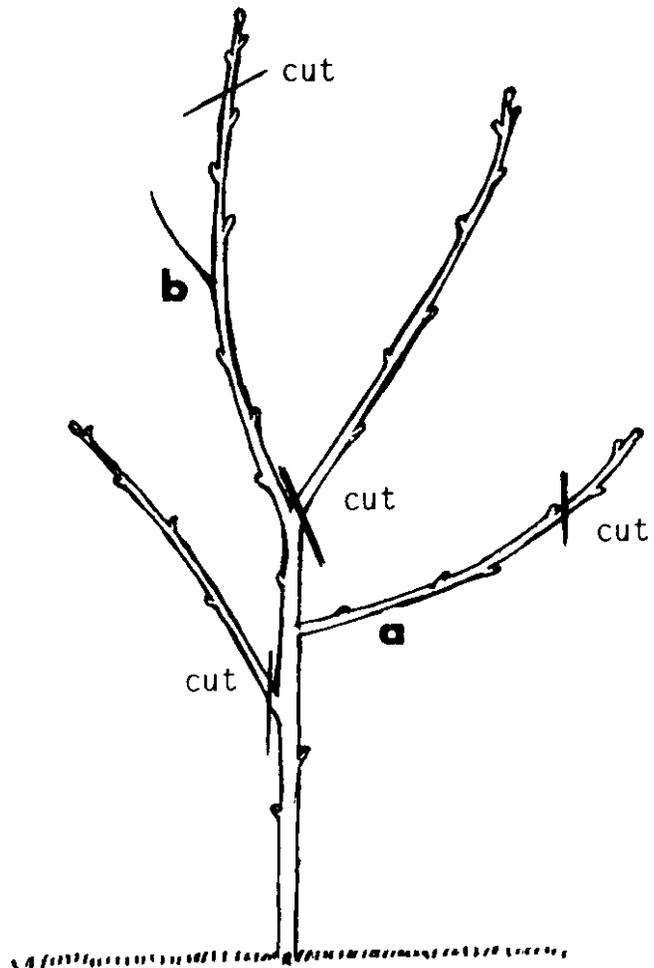
*On extremely vigorous trees select scaffold branches the first and second summers. Select wide-angle branches spaced 8 to 12 inches apart (a, b, c, and d). Finally, cut main terminal to force modified leader (e).*



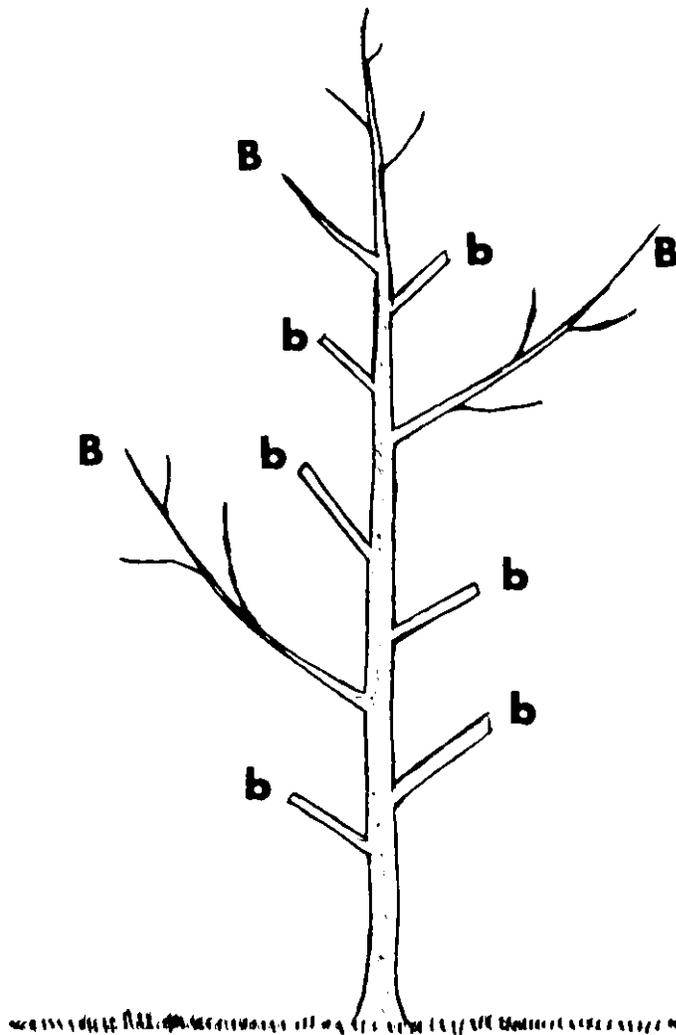
*Spreaders are effective in forming wide-angle crotches in young apple trees. Cut 1 x 2 inch (2.5 x 5.0 cm) boards at varied lengths and drive a number 10 box nail in each end. Cut off the nail head and sharpen. Pull the limb downward just enough to make the spreader fit tightly. The sharpened nails are inserted into the bark but cause no permanent injury. The spreaders can usually be removed after two years, and the limbs remain in the wide-angle position.*

close spacing. Fruit is produced higher from the ground, necessitating the use of ladders.

Little pruning is necessary after the primary scaffolds and modified leader have been developed. Keep all scaffold branches growing about the same rate. An over-vigorous branch tends to shade others and may eventually compete with the leader. Keep all suckers and water sprouts removed. Further pruning is seldom necessary until the tree begins to bear.



*Pruning a young apple tree with lateral branches at time of planting. Branch "a" left as a permanent scaffold, 24 to 30 inches (60 to 75 cm) above the ground, and if the crotch angle is wide. Branch "b" may be selected as a second lateral if it is 8 inches or more above and opposite branch "a". Remove other branches.*



*Leaves manufacture food and protect the trunk against sunburn. But to remove no branches would result in crowding and formation of narrow crotch angles, shown on first page. This diagram shows how to develop permanent scaffolds at desirable spacing and location while maintaining enough foliage along the trunk at the same time. This is called the*

*“trashy trunk” system of training. Branches that are too close to the ground, too close to scaffolds (B), or have narrow weak crotches are cut six inches (15 cm) from the trunk (b). These produce thick clusters of leaves for shade and food manufacture. After a full canopy has developed above, in two or three years, these temporary branches are removed close to the trunk.*