



Growing Fruit: Training and Pruning Young Apple and Pear Trees

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Proper training and pruning are essential for development of structurally strong, productive apple and pear trees. Using a minimal amount of pruning to achieve high fruit quality and sturdy tree structure is the goal. We recommend dwarf trees. Not only will dwarf trees bear fruit at a much younger age than full-sized trees on seedling rootstock, but they also require much less pruning. In addition, pest control for apple trees is much easier with dwarf trees.

The planting year

Ordering quality nursery stock will reduce the time and effort needed for tree training. Heavily branched (or feathered) one-year-old nursery trees will fruit more heavily at a younger age. These trees will rarely need pruning at planting except to eliminate oversized branches – branches with a diameter exceeding one-half to one-third the diameter of the trunk or leader.

Whenever a branch does need to be pruned, it is important to cut out the entire branch. If you prune offending branches by simply cutting a portion off the end, you won't solve the structural problem the branch is causing. Rather, the branch will re-grow in a vigorous and upright manner, creating unwanted shading of other wood and delaying fruiting. Remove the branch by cutting at the outside edge of the collar that forms where the branch is attached.

Branches are most productive at an angle 60 to 75 degrees from the vertical leader or trunk – in this more lateral position, branches tend to grow less vigorously and fruit more heavily than when growing in an upright position. The branches on well-branched nursery trees will naturally develop wide, strong crotches. The few that are too upright-growing can easily be tied down or spread to a wider angle.

The use of a tree-training stake is a key first step to properly training young apple and pear trees. Dwarf trees frequently require some sort of support, in part because they bear fruit so young in



An apple or pear tree should have a single trunk (leader). Maintaining a narrow top and wide bottom allows maximum sunlight interception and penetration into the tree canopy. A tree stake not only helps support the tree, it also aids in shaping the tree. Photo: w. Lord



3-year old apple tree before pruning.
Photo: W. Lord



3-year old apple tree after pruning.
2 large branches in upper half of tree were completely removed to maintain proper tree shape. Photo: W. Lord

life. Staked trees are easy to train; simply tie the trunk (often called the leader) to the stake using soft twine, chain ties or other suitable material. Lateral limbs that need spreading can be pulled down into position with soft twine tied to the stake or tied to anchors made from plastic milk jugs filled with water or sand. Staked trees will bear fruit earlier in life.

Electrical conduit pipe (one inch in diameter) is commonly used, although other materials—including wood—are used for staking trees. Use stakes eight to 10 feet long, setting them up to three feet into the soil to ensure good anchorage.

While well-branched trees are the ideal, you often have to settle for trees that have only a few or perhaps no branches. Again, newly planted trees should be tied to a tree-training stake. If the few branches they do have are uniformly distributed around the tree, then no pruning is required.

If the tree is one-sided, or becomes one-sided after you've removed an oversized branch or two, then the best course of action may be to remove all branches and start over. This will often be the case when a tree comes with only one or two branches. For trees that have been pruned back to a single trunk or leader (whip), cut the leader off at a height of 36 inches above the ground to encourage development of wide-angled branches.

The year after planting

Prune every year in late winter or very early spring starting the year after planting. If trees grew well the previous summer some thinning of laterals may be necessary. More than 5 to 7 laterals at this stage may cause crowding. Excessive numbers of branches will create shade and shaded wood will not produce flower buds and fruit.

How do you select branches to remove? First, remove any oversized branches. Oversized branches will create internal shade problems that limit fruit production in the future. Any branch more than half the diameter of the trunk where it joins the trunk is a candidate for removal.

Be sure to remove the offending branch completely. When removing a branch, cut it back to the outer edge of the branch collar at its point of attachment.

You should also remove excessively low branches. Branches less than 20 to 22 inches above the ground will make mowing difficult and will likely produce inferior-quality fruit.

Some limb spreading may be necessary in this second spring. (See photo on next page.) Limbs can be positioned at the desired angle simply by tying them down using the tree stake as an anchor. Check the leader to be sure it is properly tied to the stake. Once again, don't remove the tips of branches. There is no easier way to delay and reduce fruiting.

Year three and beyond

The basic pruning rules practiced in the first two years of the tree's life don't change as the tree ages, although the size of some pruning cuts might. Continue to train the leader to the stake and eliminate any oversized branches that develop.

Some branches that may not have been too vigorous in years one and two may become problems, growing at a much faster rate than other parts of the tree. These excessively large branches will need to be removed by cutting them out completely. Some shade problems may develop as growing branches crowd each other. Again, rather than cutting back all branches, eliminate a branch or two to prevent shading.

Spread limbs that are upright growing to create strong, wide crotch angles. Start early - clothes pins used on new branches are effective limb spreading tools. Other options include the use of anchors and tie-downs, limb spreaders (above) or weights.

Additional limb spreading may be needed for certain upright-growing branches, especially with varieties like Delicious and Macoun, which have a naturally upright growth habit.

Balance is the key. Branches should be relatively uniform in size and evenly distributed around the trunk. The top of the tree should be narrow compared to the lower portion, as shading of the lower branches will reduce fruit production. The trunk or leader should be straight to reduce shading on the lower branches. Branches should be positioned at an appropriate angle to intercept the most sunlight possible. The key tools for achieving these goals are a tree-training stake, whole-limb pruning and limb spreading.

**Fact sheet by William Lord, UNH Extension Fruit Specialist and
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