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Training and Pruning Young Apple and Pear Trees

Proper training and pruning is essential for development of structurally strong, productive apple and pear trees that will bear high quality fruits annually for many years. Since pruning reduces potential fruit production, the ideal management system is one that requires a minimal amount of pruning to achieve the goals of exceptional fruit quality and sturdy tree structure. The use of dwarf trees is highly recommended. Not only will dwarf trees bear fruit at a much younger age than full-sized trees on seedling rootstock, they also require much less pruning.

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 naturally fruit more heavily earlier in the life of the orchard. These trees will rarely need pruning at planting except to eliminate oversized branches – branches with a diameter exceeding 1/2 to 1/3 the diameter of the trunk or leader.

Whenever a branch does need to be pruned, whether on these newly planted trees or later when these trees are mature, it is important to cut out entire branch. If you prune offending branches by simply cutting off a portion of the end, you will not solve the structural problem the branch is causing. Rather, the branch will regrow in a vigorous and upright manner, creating unwanted shading of other wood and delaying fruiting.

Branches are most productive at an angle 60 to 75 degrees from the vertical leader or trunk – not quite, but nearly flat. The branches on well-feathered 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.

An apple or pear tree should be shaped like a Christmas tree. The tree should have a single trunk (called the leader), a narrow top and wide bottom. This shape allows maximum sunlight interception and penetration into the tree canopy.

The use of a tree training stake is the 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 life. Staked trees are easy to train – simply tie the leader or trunk to the stake. Lateral limbs that need spreading can be pulled down into position with soft twine or string tied to the stake. Staked trees will bear fruit earlier and be more

productive than trees that are not staked. Electrical conduit pipe (3/4 to 1 inch in diameter) and pressure-treated wood (2 inches in diameter) are ideal tree stakes. Use stakes 8 to 10 feet long, setting them up to 3 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 even 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 an oversized branch or two is removed, then the best course of action is to remove them all 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

Beginning in the second spring, prune every year in the late winter or very early spring. If the trees grew exceptionally well the previous summer, or came from the nursery with many laterals, some thinning of laterals may be necessary. More than 5 to 7 laterals at this stage may cause crowding. Crowding means shade and shaded wood will not produce flower buds and fruit.

How do you select branches to remove? First, remove any branches that are oversized just as we did at planting. Oversized branches will create internal shade problems that limit fruit production in the future. Once again, any branch over 1/2 the diameter of the trunk where it joins the trunk is a candidate for removal.

Be sure to follow the complete removal rule. Completely remove the offending branch – removing a portion of it will not solve the problems it will soon create. You should also remove excessively low branches. Branches less than 20 to 22 inches above the ground will be difficult to mow under and will likely produce inferior quality fruit as they sag under crop loads.

Spread limbs that are upright growing to produce wide crotch angles. Start early - clothes pins used on new branches are effective limb spreading tools. Other options include the use of anchors and tiedowns or weights.

Some limb spreading may be necessary in this second spring. (See illustration to left.) Limbs can be positioned at the desired angle by simply 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, do not remove the tips of branches.. There is no easier way to delay and reduce fruiting than by tipping or heading back branches.

Year Three and Beyond

The basic pruning rules practiced in the first two years of the tree's life do not 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 didn't seem too vigorous in years 1 and 2 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, completely eliminate a branch or two to eliminate shading rather than cutting back all branches.

Additional limb spreading may be needed for certain upright-growing branches, especially cultivars like Delicious and Macoun which have a natural upright growth tendency.

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.

original fact sheet by William G. Lord, Extension Fruit Specialist, edited, reformatted 2/01

Drawings from Alabama Cooperative Extension bulletinTraining and Pruning Tree Fruits, ANR53