

# How to Prune Old Apple Trees

By Jenny Wright

## Why prune old apple trees?

Pruning enhances the health, appearance, and structural strength of the tree. Pruning keeps the tree within chosen bounds, encourages fruit bud development of the whole tree, and increases the size and color of the fruit.

What follows is an attempt to describe and illustrate how to restore old abandoned apple trees to their full potential. Pruning apple trees is an art, not easily reduced to simple formulas. Each tree presents unique problems. It takes lots of experience to learn how to adjust and respond to these different circumstances. Pruning is best taught in person by demonstrating on actual trees, matching instructions to the needs of the trees and to the knowledge level of the learners. However in spite of all this, here is my best effort.

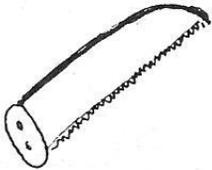
The following focuses on backyard trees, not on trees in a commercial orchard. Some of the principles are the same, but the circumstances are quite different in a commercial orchard, so the pruning would be different.

## When to Prune

The traditional time to prune apple trees is during dormancy: starting after there's been some good cold weather. In New Hampshire, we start in late December and work through the winter until just before the trees bloom. It is OK to prune when trees are breaking dormancy in the spring.

## Best tools for pruning

### Wheeler Saw

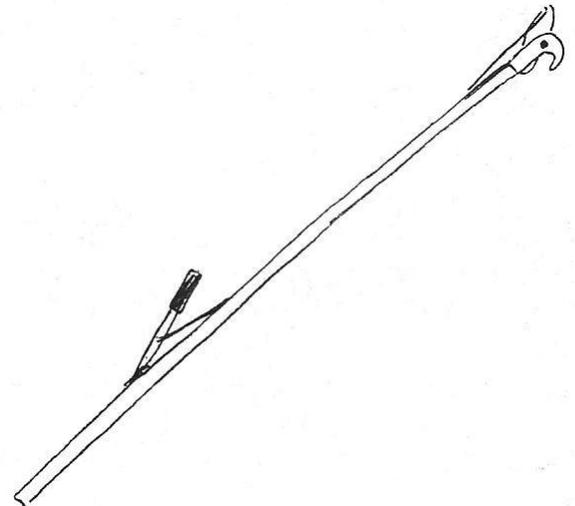


Makes a smooth, flush cut and fits into narrow places. It easily cuts through branches up to 4" or larger in diameter. We have cut 10" branches with this saw.

### Allen Pole Pruner

Pull the handle and a wire closes the clipper and cuts branches up to 1.5" in diameter. It comes in 8' and 10' lengths; a 10' is necessary for pruning big trees.

The saw, blades and pole pruner are available from Orchard Equipment Supply, PO Box 540, Conway, MA 01341. The saw and blades are available from Allen Brothers in Westminster, Vermont (802-722-3395) or Organic Grower's Supply (FEDCO), PO Box 520, Waterville, Maine 04903. This last source has the best saw blades for the Wheeler saw.



## Step 1: Evaluate your Trees

Old abandoned apple trees come in a wide range of conditions. Some are tall and vigorous, growing larger every year, with plenty of young fruiting wood. At the other end of the spectrum are trees in a holding state, with only old wood, slowly dying back. Most trees of either kind will have shaded out many of their lower branches and will be too tall. If you can reach all parts of a tree by climbing, do so. If not the ladders with pointed tops used for picking apples are very handy.

### Location

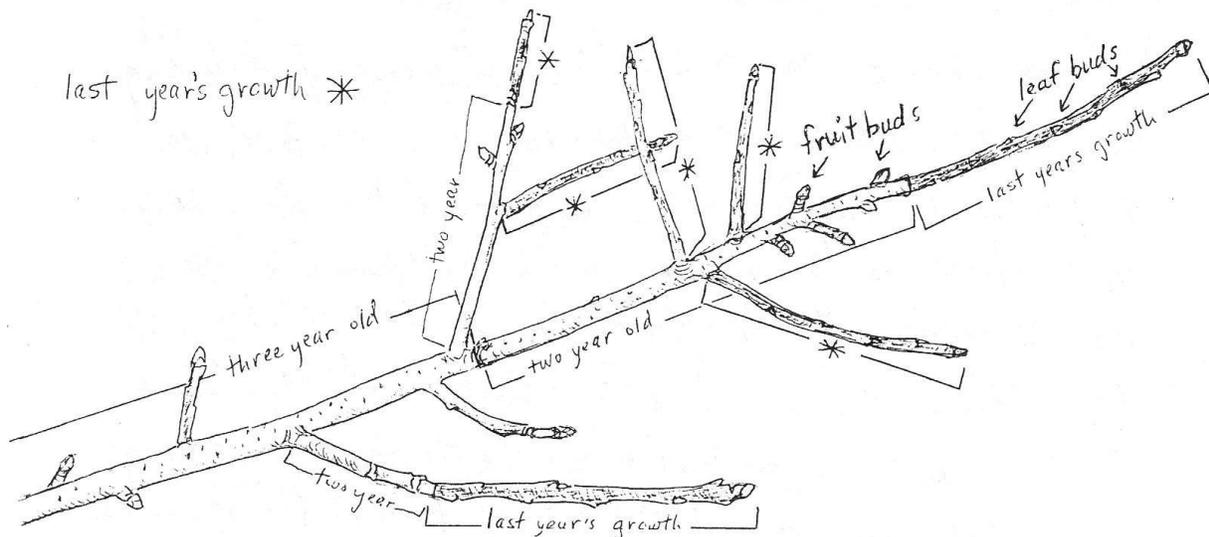
The most important thing you can do for your trees is make sure they get sunlight all day long. Many backyard trees are overshadowed by your favorite shade trees. Missing half a day of sunlight will mean a tree will be half the size and vigor it could be, and possibly misshapen. If you don't want to cut down the offending shade trees, don't expect much of the apple trees. Six hours of direct sunlight is a bare minimum.

### Look at the Wood

You'll need to be able to tell apart fruiting and vegetative wood, and old and young wood. Vegetative means producing branch and leaf growth. A fruiting branch makes fruit buds, and later apples, as well as leaves and less vegetative growth. Last year's wood will almost always be vegetative because fruit buds rarely form on 1 year old wood. Horizontal or sloping branches tend to be more fruiting than vertical upright growth, but all branches that get plenty of sun will become fruiting in 3 or 4 years, and the younger ones will produce the biggest apples. Old trees tend not to be vegetative enough --- so the approach with old trees has to be different than with young trees which tend to be much more vegetative, sometimes too much so.

Look carefully at several branches: The amount of last year's growth can be determined by examining the end of a branch. The terminal or one-year-old growth is shinier and has no side branches. There is a visible line where the two-year old wood starts. The branches at the top of the tree (that get the most sun) will have the most terminal growth, but lower branches can have 1 year old wood on them too. Some fruiting branches in the shaded part of the tree will have none. In the top of a tree the 1 year old wood can be 2 feet long. The more terminal growth, the more vigorous your tree is.

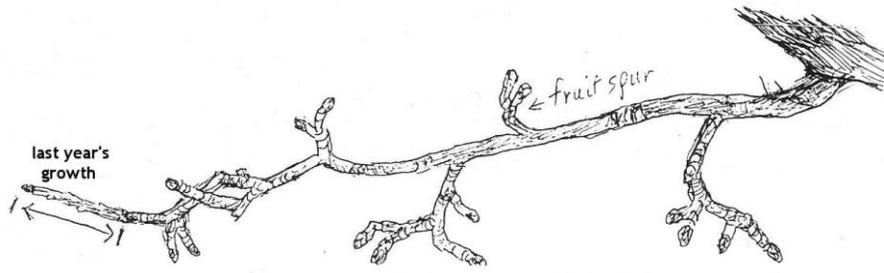
Cut down a branch from the top of the tree so you can look at it up close:



**Young Fruiting Wood**

In the least vigorous trees, there will be hardly any new growth, even in the top of the tree.

The tree has leaf buds and fruit buds. They look similar, but the fruit buds are larger. Some fruit buds are located on short twigs call fruit spurs.



**Old Fruiting Wood**

Fruiting wood can be young and vigorous, or it can be older with no terminal growth and lot of old fruit spurs. Your goal is to develop young fruiting wood.

### Fertilizing

If your tree isn't growing much, if there is very little terminal growth even in the top branches on the tree, then it needs fertilizer. We put a bushel or two of chicken manure (or 3 of goat, 4 of horse or cow) in a ring around the drip edge of the tree in the spring. The "drip edge" is the ring made by water dripping off the furthest out branches of the tree – this is where the feeder roots are. Some people use 10-10-10 chemical fertilizer. Fertilize every spring. If your tree has a foot or more of terminal growth on most branches in the top of the tree, you don't need to fertilize at all. Compost, grass clippings and wood ashes, in moderate amounts, are also good fertilizers.

### Decide on your goals

What are your plans for the apples? Will you spray? Will you pick from a ladder? If so, you will need to control the height to what you can manage. If you'll pick up the unsprayed drops for cider, reducing the height isn't necessary. Most trees that are picked from ladders and sprayed are reduced to 15' or somewhat less, eventually. If the trees are quite tall, it may take a few years to get them down to 15'.

### Trees with no hope

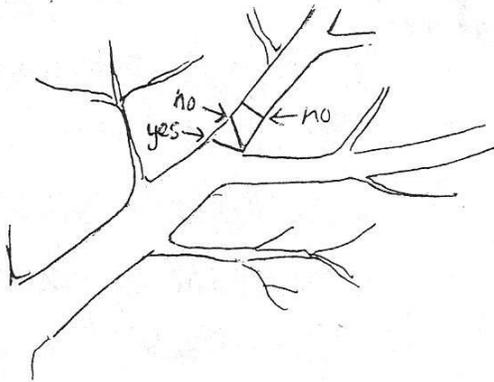
The only trees that have no hope are ones in which the trunk is so unsound that the tree rocks back and forth when you push it, as if it might fall over or break off at ground level. Also, tree that's more than  $\frac{3}{4}$  dead will probably not be brought back to health.

I once pruned a tree that was over  $\frac{3}{4}$  dead. A pile of manure had been unloaded near it four years before. Almost all the healthy wood on the tree was on that side and less than 5 years old. This tree had hope. You may have to try for a few years to see.

## Step 2: How to Make a Cut

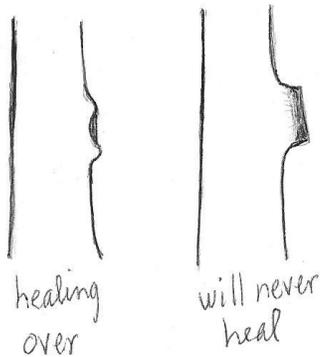
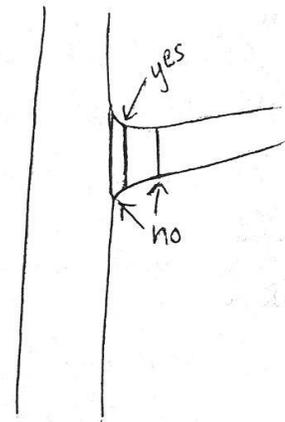
### Flush Cuts and Under-cuts

When cutting off the end of a branch, cut to a side branch, making a cut that does not leave a stub.



Where a side branch comes off another, there are small wrinkles in the bark. You don't want to remove this area, called the growth collar, because this bark is the fastest growing. Cutting here (flush with the growth collar) also reduces the surface area of the wound.

The "yes" lines in the drawings show the location of the cuts which will heal the fastest.

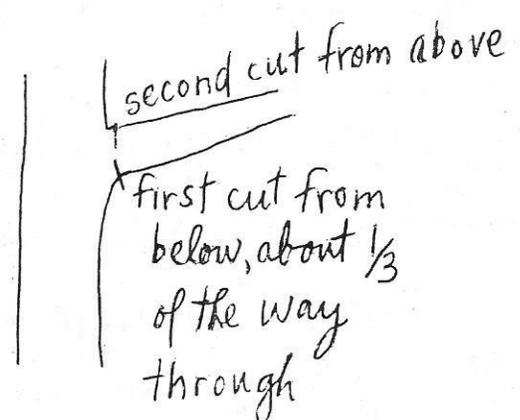


If the cut is made leaving a stub, in most cases the tree will not be able to cover the wound with living bark. Bark will die back, the wood will rot and create a hole in the tree. Trees can live with this, but they are stronger if the cuts can heal over.

On larger branches, it is very important make an undercut first. This prevents a big strip of bark from being torn off when the branch falls. Or, instead of an undercut, first remove the bulk of the weight by making a cut that leaves a stub one foot long and then make another cut, removing the stub.

The larger the branches, the more important it is to make an undercut and to locate the cut properly. On branches an inch or less it is not as important.

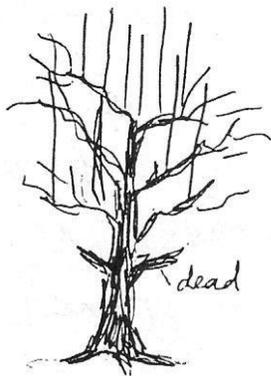
The most recent thinking regarding painting or tarring wounds on the tree is that it is not necessary (except when grafting). Anything put on the wound retards the healing-over process. It is necessary when grafting to keep the moisture in the wood until the graft has started to grow, but not necessary when pruning.



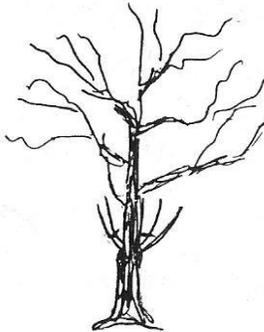
## Suckers

A “sucker” or “watersprout” is a one –year-old shoot, often growing straight up. Many people have the mistaken idea that all of these should be removed because they “take energy from the tree” and have no future value. After you start pruning a tree, you’ll have more suckers and more terminal growth on the branches that are left. On a vigorous tree that hasn’t been pruned in many years, we will sometimes remove 1/3 of the living branches in the tree the first year we prune it. When the tree is reduced to a smaller size or number of branches, the tree produces new growth, including suckers, to try to bring the top back into balance with the roots (which had been supplying a larger tree). Some people, seeing these suckers, think that pruning made the tree grow more, but actually, over the long haul, pruning has a dwarfing effect. That’s good because it means there’s no danger of a tree becoming too vegetative from regular pruning. Annual pruning eventually causes the root system to slow down to come into balance with the tree.

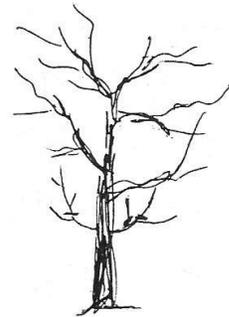
In old trees, this new wood, these suckers are precious. They will become new branches where you need them. The younger branches will create a tree that has the attributes of a young tree; healthier, more vigorous wood that produces larger apples. So, save some suckers that grow where you need branches:



Before pruning  
year 1

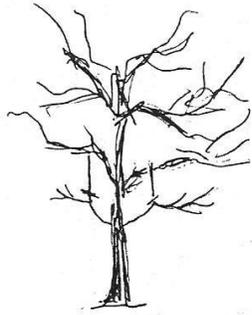


year 2  
save the  
least upright  
suckers

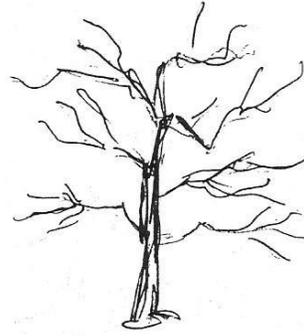


year 3  
remove  
suckers on  
these new  
lowers

Favor the suckers that lean the most and are thinnest. They’ll fruit the soonest. But if the only one growing where you need a branch is straight up, save it anyway and next year cut it to a side branch. Later, when the new branches start to bear, they’ll bend down under the weight of the apples and be permanently lowered. As these new branches grow, remove the new suckers that grow on them. You want to keep these lower branches reachable from the ground.



year 4  
keep on  
removing  
out-of-reach  
growth



year 5  
new lowers  
are producing  
apples

In those trees which have lost their lower branches, you'll want to save extra potential lowers and later decide which are permanent and which are temporary.

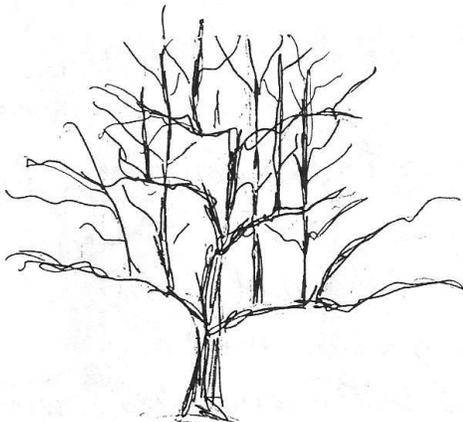
Pruning decisions are difficult because you have to find a balance between conflicting priorities. In old backyard trees the objective is this:

**Favor young wood while also favoring a good design**

Often the young wood has the worst design (shape) and the old wood has the best design. The process of rejuvenating an old tree takes several years, during which you'll be removing the young wood with the worst design along with the oldest of the old wood.

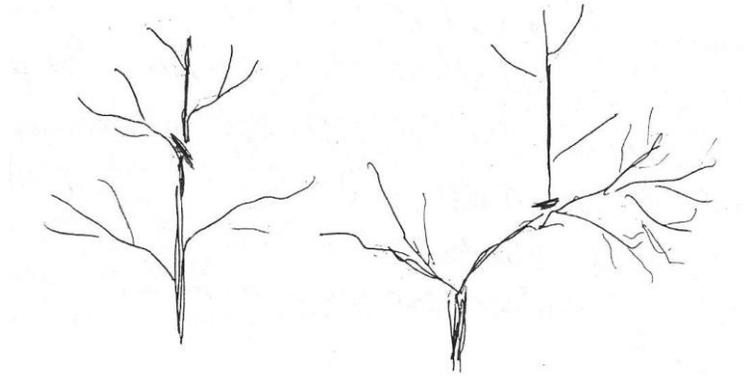
As you remove the highest branches and many of the vertical risers, the tree will produce more and more young wood on better and better branches, lower down. In a few years some choice suckers will have become young fruiting branches and you'll remove more of the older fruiting branches. You'll gradually have better and better branches to choose from. Some of those you have saved will be removed later.

The shape we prefer in an apple tree is the "Central Leader" shape. The main branches of the tree all come off of one central trunk, like the spokes of a wheel but not all at the same level. We prefer this shape because the tree is structurally stronger and the lower branches have a wider reach than the upper ones. But not all older trees can be made into central leader trees.

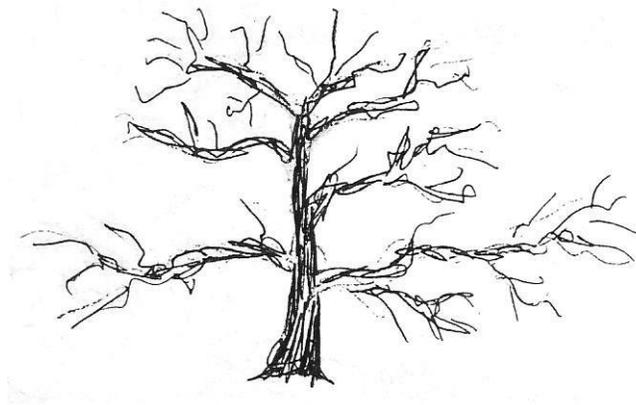


Often unpruned trees have multiple risers (suckers left to grow for years), growing up through the old scaffold branches. Usually you'll remove most of these, but not all, during the first year.

The ideal slant of a new branch is a 30° to 40° slope. When the weight of the fruit bends it lower, it will still be horizontal. Clear a space of 2 feet or so above a developing lower branch. When you reduce the height, avoid a “chopped off” look to the tree. Always cut a branch off to a side branch or remove it totally:



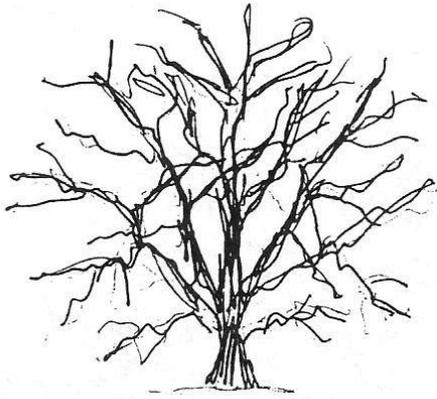
A pruned central leader tree with a good design:



### Two examples

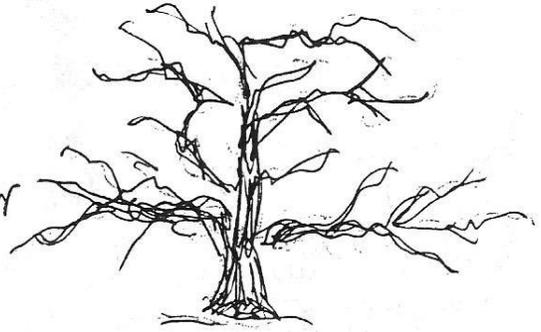
We worked in an abandoned orchard that hadn't been pruned or fertilized for 15 years. The trees had lost all their lower branches. The soil was not fertile there. Whole sections of the trees had died and there was very little terminal growth on even the top most branches. There were no suckers in these trees. After 8 years of pruning and fertilizing, the trees were totally transformed. About half the apples on the trees were being produced on new lower branches and the upper branches were all young wood.

In another orchard, which was seventy years old, standard trees planted 40 feet apart had been regularly fertilized and pruned, but not pruned to reduce the height or favor the lower branches. The trees were picked with 18 or 20 foot ladders and the lower branches were the weakest branches in the trees. 7/8ths of the apples were in the tops and some of the trees had 4 or 5 leaders. After 8 years of our pruning, the trees are now picked with 16 foot ladders and over half of the apples are reachable from the ground. Many of the trees now have a central leader, though some still have 2 or 3 leaders.



Before

after



### Now Start Pruning

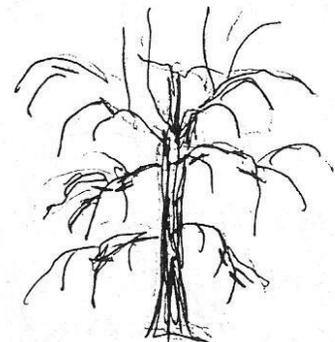
1. Remove dead wood. If you're not sure a branch is dead, scratch some bark with your saw. If the scratch is yellow green it's alive; if it's brown, it's dead. Cut back to a side branch of live wood. Avoid leaving stubs.
2. Remove any vines growing on the tree; mow brambles and remove root suckers and small trees growing around the tree. Mow under the tree at least once a summer.
3. Favor any lower branches reachable from the ground. Clear a space above good lower branches. Remove any parts of the lower limbs that will be too low (in the grass) when the weight of the apples is on them.
4. Remove vertical risers growing from the lower branches (unless the top is beyond hope – see special cases).



5. Remove most or all of the risers growing straight up from the upper branches. You should avoid removing all the side branches for a long stretch of a big branch – (avoid “blank wood”). It's the side branches that keep the sap flowing under the bark. Large areas of blank wood can lead to bark die back, especially on the top side of the branch.

6. Usually, you'll want to reduce the overall height of the tree, but not always, particularly if you're planning to just pick up the drops. Even if you don't reduce the height, you'll thin the tree by reducing the number of high branches. This will let more sunlight reach the lower branches.

7. Favor horizontal or upward slanting branches over vertical or downward sloping branches. Some varieties (Cortland and Paula Red, etc. ) will be almost all very droopy wood. Remove the droopiest parts and leave the rest.



### Special cases

In a few cases, the original top of your tree will be dead, or so weak and old that you'll decide to use a young riser or even a sucker to grow a new top. You'll choose the most centrally located young riser with the best side branches and favor that one. You may leave a couple of others, temporarily, but remove any branches that crowd the chosen one.

There is a disease that attacks apple trees called "Black Rot". It spreads fast, traveling under the bark, killing new formerly healthy wood every year. There other reasons that branches die, the most common one being: too much shade from above, but with Black Rot whole branches of young, vigorous wood can die in a year. If a tree has Black Rot, the only hope is to remove all the diseased wood plus 3 feet more than where the disease is visible on the bark. If it's not too close to the main trunk, you can do this and save the tree. Even if the whole top of the tree is removed, a tree can grow a new top and survive. If it's already too close to the main trunk, just remove the dead branches and await the inevitable. It's best to remove and burn any brush with this disease in it.

Black Rot is a fairly rare problem and not that easy to describe or diagnose. If the disease is spreading less than a foot a year along a main branch, it is probably not Black Rot. For slower growing maladies, prune normally.

### Some common misconceptions about pruning

#### Misconception #1: "Pruning will increase yield"

The main reason to prune is to improve the overall health and appearance of the tree. Bumper crops come when there are perfect conditions for pollination (good weather, lots of pollinating insects) and conditions that thwart the insects that damage the fruit.

Pruning, when properly done, will eventually create a tree with younger and healthier wood, and will improve the size and color of each apple. How many apples will be determined by weather and insects.

#### Misconception #2: Extreme Theories

A. "Remove all suckers" or "Remove all upright growth" or even "Remove all 1 year old wood". The many exceptions to these are discussed throughout this article.

B. "Never cut off the end of a branch" or "cut off the end of every branch". We knew two apple growers whose orchards abutted, who held these two opposing views.

Actually, the general principles of pruning are not simple formulas. Our decisions have to include the relative vigor of the branch, the location of the branch on the tree, the movement of the branch when it is laden with fruit, etc. All the general rules have important exceptions.

#### Misconception #3. "You can only prune when the tree is dormant".

Many growers now believe you can prune any time of the year. We've seen this done many times and have never seen it cause any ill effects to full-grown trees. In commercial orchards, trees are pruned up until bloom and often during the summer trees are "summer pruned", removing suckers. It is harder to see the basic structure of the tree when leaves are on.

But it is true that young trees should not be pruned before January 1<sup>st</sup>. Unlike mature trees, young trees are susceptible to "winter injury" when pruned too early - a reaction to extreme cold that causes the bark to separate from the trunk on the sunny side of the tree.

## Conclusion

So, there it is. Good luck. When in doubt, be cautious, but don't be so immobilized that you don't actually give pruning a chance.

The more vigorous and fast-growing is the tree, the more of it you can safely remove – up to 1/3<sup>rd</sup> – and the sooner you'll be able to bring it around to the desired shape. The less vigorous, dying back trees will take longer to restore. Make sure they get sunlight and fertilizer and a lighter pruning, cutting out at most 1/6<sup>th</sup> of the live wood. Backyard trees are not thinned out as much as those in commercial orchards.

## Final Statement

With pruning, it's not the branches that you cut off and haul away that count. It's the ones you leave on the tree!

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