PRUNING FRUIT TREES

Fruit Gardens

BY
ALAN ERB

Fruit trees should be pruned every year. When you plant a fruit tree, you should be as dedicated to giving the tree proper care and pruning, as you are eager to enjoy quality, fresh fruit. It is important to understand the principles of pruning, and to practice them. Don't be afraid to prune, but prune for a specific purpose. The objectives are to:

- Develop strong tree structure. This should begin when trees are planted and continued each year thereafter.
- Provide for light penetration. Penetration of the sun is necessary for fruit buds to develop and fruit to mature properly.
- Control tree size. Most fruit trees require pruning to control branch spread and tree height.
- Remove damaged wood. Some wood injury will occur each year from wind damage, fruit weight, and diseases and insects.

PRUNING TOOLS

Pruning tools should always be sharp when pruning so clean cuts can be made. Cuts that result in bark tears, stubs, and a jagged surface are slow to heal, or they may not completely heal over.

1. Hand shears (Figure 1-A). A scissors type of hand shear is used to prune small size wood—up to ¼ inch diameter.
2. Loppers (Figure 1-B). Long handled loppers are used for cuts about ¼ to ½ inch in diameter and are usually needed by the third year of tree growth.
3. Fine-toothed pruning saw (Figure 1-C). A saw will be needed for branches larger than ½ inch or cuts where pruning shears and loppers cannot reach.
4. Ladder. Avoid standing on tree limbs since it may damage the bark.
5. Pole pruner and/or pole saw. Long-handled equipment is used to make cuts in high areas while standing on the ground.

WHEN TO PRUNE

The best time to prune is during late winter or early spring just prior to the beginning of active growth. You should prune during the late dormant period because:

- Wounds will heal quickly when growth begins.
- Undesirable branches and other wood to be pruned can be easily seen since there are not leaves on the tree.
- Winter damaged wood is easier to identify at this time.
- The bark is less likely to tear when cuts are made.
- Trees pruned in early winter may be damaged by subzero temperatures that occur after pruning.

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Figure 1. **Necessary pruning equipment (A) Scissors type hand shears, (B) Loppers and (C) Fine Tooth Saw.**

Trees can also be pruned in the spring and early summer to control the growth on young trees, thin heavy fruit loads, or remove water sprouts and other undesirable wood.

PRUNING TERMS

Bearing tree—A fruit tree that has reached the stage of development to produce fruit annually (Figure 2).

Branch—A shoot that has developed to maturity and has passed through one or more dormant seasons (Figures 2B and C).

Bud—An undeveloped shoot or stem (Figure 2G).

Crotch, crotch angle—The angle between two branches near their point of origin (Figure 2K).

Fruit spurs—Short, thick growth upon which flowers and fruit develop (Figure 2F).

Heading back—Removing a portion of the terminal growth of a branch (Figure 2J).

Leader—A branch selected as a continuation of the trunk and from which scaffold branches develop (Figure 2D).

Scaffold branch—One of the branches making up the basic framework of a tree (Figure 2B).

Secondary branch—A branch which develops from a scaffold branch (Figure 2C).

Shoot—New growth developing during a current season (Figure 2E).

Sucker—A rapidly growing shoot arising from a root or a larger branch (Figure 2I and 2H). A water sprout is a sucker growth that generally develops just below a major pruning cut.

Thinning out—The removal of a branch at the point of attachment. This may be removal of small wood (Figures 6 and 7) or it may include a large branch (or branches) and be referred to as "bulk pruning" (Figures 11 and 12).

Trunk—The main stem or body of the tree (Figure 2A).

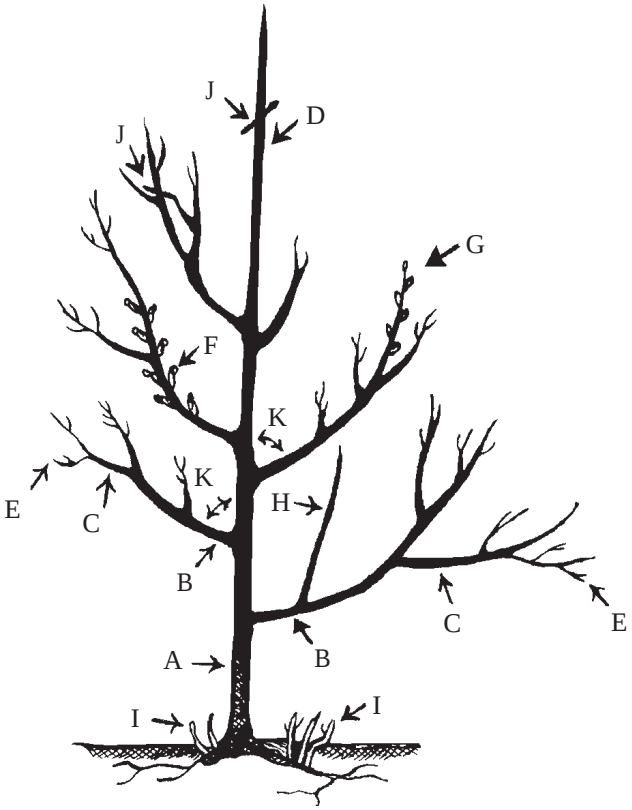

Figure 2. **Fruit Tree Parts.**

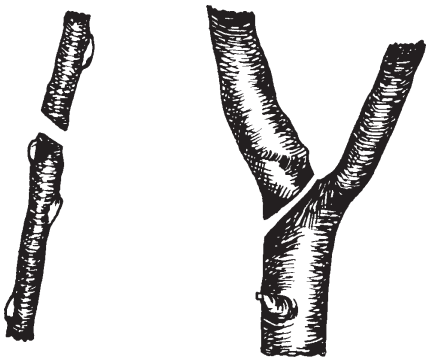

Figure 3. **Smooth cuts that are parallel with the remaining growing points will heal over rapidly.**

MAKING PRUNING CUTS

Select the proper tool, depending on the thickness of branches to cut. The diameter of branches pruned with shears and loppers should not be too large since the jaws may be sprung or lopper handles broken. As a cut is made, place the cutting blade of the shears or loppers close to the remaining branch. This will result in a smooth cut without leaving a stub (Figure 3). Large branches should be removed in two steps to prevent tearing the bark (Figure 4).

1. At a point about 6 to 12 inches from the point of attachment, cut on the bottom of the branch to be removed; then cut through from the top.
2. Remove the remaining stub with a cut even with remaining supporting branch.

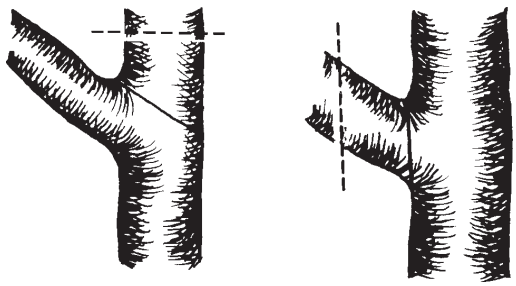

Figure 4. **Remove large branches in 2 steps.**

PRUNING NON-BEARING TREES

In pruning a non-bearing tree you should select and develop branches to be the fruit-supporting framework of the tree. After these scaffold branches have been selected, only a limited amount of pruning will be necessary until the tree comes into full bearing. Too much pruning on a 3- or 4-year-old tree may delay fruit bearing for 1 or 2 years or longer.

The branch structure of trees will vary with the kind and variety of fruit tree. Some branches will develop at the desired spacing and angle on the tree trunk. However, other trees will not have branches develop as you desire. In these situations, try to follow the pruning principles and develop the best structure you can.

TRAINING OR CHOOSING A GROWTH FORM FOR THE TREE

Methods used to train young fruit trees may either be a “central leader” or “open center.” Apple, apricot, cherry, pear, and plum trees are generally pruned to the central leader method. The growth pattern of these fruits is for one branch of the tree to be dominant—the central leader training method promotes this characteristic. Peach and nectarine trees may be pruned to either a central leader or open center method since they do not have a strong tendency for one shoot or branch to dominate the growth of other shoots or branches. Open center trained trees will usually produce more fruit and should be the training method used for peach and nectarine trees unless space is a limitation.

Central leader. This system has a central trunk from which the scaffold branches develop. The scaffold branches should:

- Form wide angles (about 60 to 80 degrees) with the trunk.
- Be distributed on different sides of the tree for good balance.
- Be spaced about 6 to 10 inches apart on the trunk with no branch directly opposite or below another.

Training during the year of planting and the following year is very important since you will be selecting the scaffold branches. Here are some pruning and training suggestions for each year after planting until the tree bears fruit.

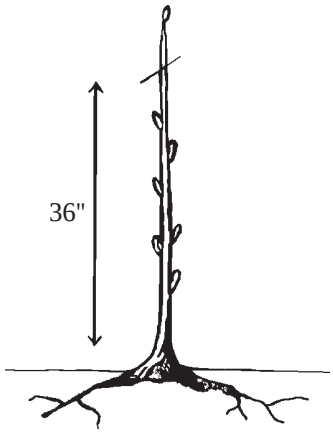

Figure 5. **Unbranched trees (whips) should be cut (headed back) to a 36 inch height at planting. (Broken lines show wood to be pruned off.)**

Year of Planting. Newly purchased trees are usually "whips" or unbranched trees 4 to 5 feet high At planting they should have the top pruned off to a height about 36 inches above the ground—about 30 inches for dwarf trees. This will force shoots to develop at desired levels (Figure 5).

Trees that have branches already developed should be pruned so that 2 to 4 branches for scaffolds plus the central leader remain and the rest of the branches are pruned off.

Second year. Developing the tree framework is the main objective this year (Figure 6).

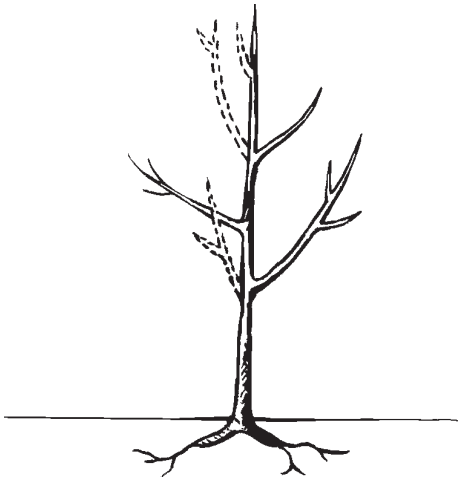

Figure 6. **Branched trees should be pruned to 2 to 4 branches with wide angels and a leader, other branches removed. (Broken lines show wood to be pruned off.)**

- Select one of the most vigorous, upright growing branches for the leader.
- Select 2 to 4 scaffold branches that form wide angles with the trunk and are evenly distributed on the different sides of the trunk. They should be at least 6 inches apart and the lowest scaffold about 18 to 24 inches above the ground.
- The leader should be pruned to about 18 to 24 inches above the top scaffold branch. If necessary, the scaffold branches should be pruned at the ends so they are about 6 to 12 inches shorter than the leader.

Some additional tree training can be done during the spring and early summer, such as removing undesirable shoots as well as spreading scaffold limbs so they develop at a wide angle with the trunk.

Limbs can be spread by using lath or ¾ inch by ¾ inch square wooden pieces cut to proper lengths to spread limbs to wide angles with the trunk. The angles should be over 45 degrees and less than 90 degrees. Be careful not to split the branches at the point of attachment as you put the spreaders in place. Spreaders can be kept in position using four penny nails driven into the ends of each spreader, then the nail heads cut off at an angle and the nails pushed about ¼ inch into the branches. Or a stake can be driven into the ground and a soft material such as nylon tied onto the branch to pull it towards the stake and spread it. Generally, limbs should be spread for at least one growing season. The spreading of 1-year-old scaffold limbs should progress up the tree until all the scaffolds have been spread.

Third Year (Figure 7)

- Select a shoot to continue as the leader. It may need to be pulled into a vertical position and tied to a stake placed beside the tree trunk, if it is growing away from the center of the tree.
- Select 2 or 3 more shoots growing from the leader for more scaffold branches. Compare the length of them with the leader and prune them 6 to 12 inches shorter than the leader.
- Scaffold branches developed in previous seasons will have formed secondary shoots. On each scaffold, save 2 to 4 of these new shoots that are growing 6 inches or more away from the leader of the scaffold branch. Shorten

any that are longer than the leader of the scaffold. Each scaffold should be pruned as though it were a young tree. The main difference being that the secondary branches should be primarily on the same plane as the scaffold.

- Prune the scaffolds of the tree so they are in balance. Do not let lower branches out grow the upper portions of the tree, nor the upper branches grow longer and "shade-out" the lower ones. The overall shape you are trying to develop and maintain is an inverted cone.

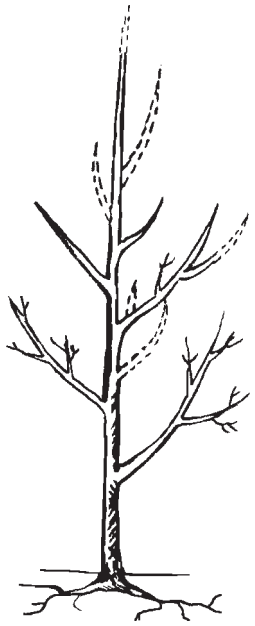

Figure 7. **In the second and third dormant pruning, select additional scaffold branches, keep the growth of all scaffold branches in balance and maintain a dominant leader.**

Fourth Year. This pruning should encourage formation of more framework and keep a balance in the growth of scaffold branches. Two or three more scaffold branches can be chosen as in previous years. The leader should be kept dominant by shortening competing branches. Branches that form narrow "crotches" should be removed. Twig and spur growth should be saved for potential fruiting wood.

Fifth Year. The main framework that was started with the first and second pruning should be well established with 6 to 8 scaffold branches. The leader can be allowed to grow for 1 or 2 additional years, then pruned back to an outward growing branch when the tree reaches full bearing.

Open-Center Method. Peach and nectarine trees are usually pruned in this method. The central leader is removed at planting time and 3 or 4 scaffolds are developed into the fruiting area.

Steps in training a tree to the open-center method are:

Year of Planting

- Prune the newly planted tree or whip to about 30 inches at planting time.
- Select 3 or 4 scaffolds that form wide angles with the trunk and are evenly distributed on the different sides of the trunk (Figure 8). They should be 4 to 6 inches apart and the lowest scaffold about 14 to 18 inches above the ground. Larger branches that are uniform in size can be pruned to about 12 to 18 inches. Slender and uneven branches can be cut back so that about 4 to 6 buds remain on each branch. Select shoots which develop from these buds for the scaffold branches.
- In the spring and early summer, remove the new shoot growth, except for the scaffolds that develop on the trunk. This may need to be done within 2 or 3 weeks after growth begins and again 3 or 4 weeks later.

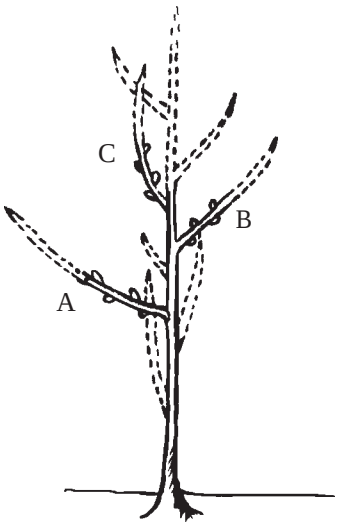

Figure 8. **Open center peach tree pruned to three scaffold branches (A, B and C).**

Second and Later Year to Bearing (Figure 9).

Remove any shoots other than those chosen for the scaffold framework; prune the scaffolds to equal lengths so they grow at about the same rate. Other corrective pruning includes removing branches with poor crotch angles, that are growing through and across the tree, and that are broken or showing disease or insect injury. Usually a young tree needs very little other pruning.

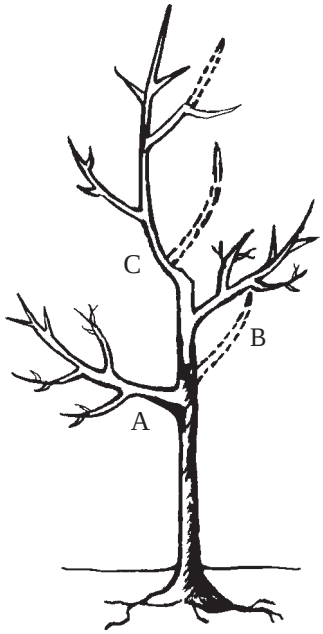

Figure 9. **Open center peach tree showing pruning cuts to be made at first or second dormant pruning on three scaffold branches (A, B and C).**

PRUNING BEARING TREES

Yearly pruning of trees helps promote uniform annual bearing. When annual pruning is included with other growing practices, trees remain vigorous and high quality fruit is distributed throughout the tree.

Trees that were properly trained from planting require little pruning in the bearing years. To make decisions about what to prune out and what to leave, consider these objectives:

- Remove dead, diseased, or damaged branches (Figure 10A).
- Remove branches that are severely crowded and shaded and bear few, if any, fruit buds (Figure 10B). Fruit buds are plump and rounded in shape and leaf buds are smaller, more slender and come to a sharper point.
- Remove branches that bend to the ground, or cut them back to upward growing lateral branches (Figure 10C)
- Prune out water sprouts (Figure 10D). Occasionally a shoot may be left to fill in an open area where a limb has been removed.
- As trees grow older and larger, heading-back cuts are needed to lower the tree height and reduce branch spread (Figure 10E). Prune upper branches shorter to prevent shading of lower branches.

The removal of diseased wood can be done during the summer, if you observe a disease problem, and water sprouts can also be removed in the summer while they are small and easily pruned.

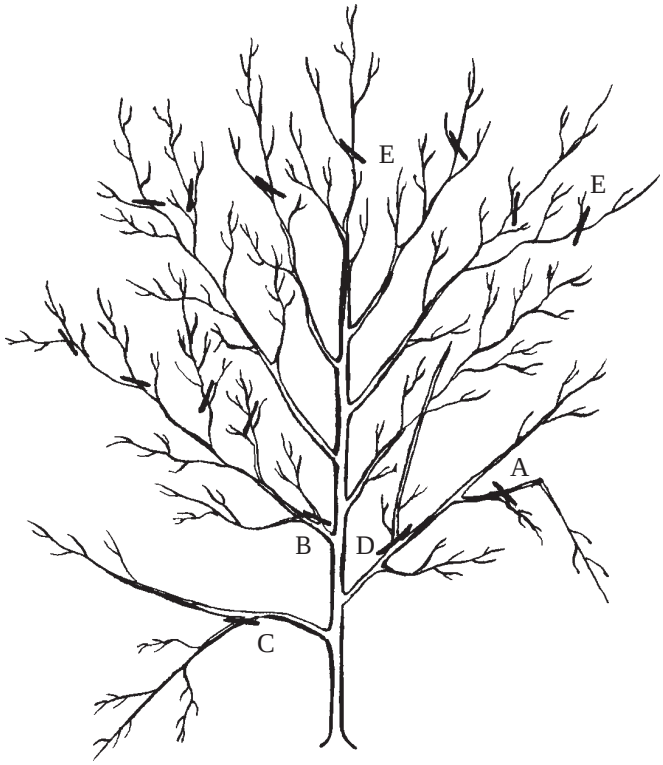

Figure 10. **Yearly pruning cuts (A through D) and reducing height (E) of bearing fruit tree.**

PRUNING DIFFERENT FRUITS

Apple

There is a difference among apple varieties in their growth habits. Delicious tends to grow upright and develop narrow crotches so spreading the scaffolds while they are young will generally improve the tree structure. Jonathan or Winesap trees generally develop in an open pattern so less spreading may be necessary to develop strong tree structure. Observe each tree as it grows and spread the branches to maintain a wide crotch angle and increase light penetration.

"Spur-type" trees develop many small spurs rather than long shoots on young growth . Each spur bears a flower cluster. Because these trees develop branches sparsely, fewer branches should be removed. Heading back helps to promote growth of shoots to become spur-bearing branches. When you purchase apple trees, be sure to note if you have purchased a "spur-type" tree.

Pear

Pear trees tend to grow upright and form narrow crotches. Spreading branches can help develop a more open structured tree. Pears should be pruned very lightly—less than other kinds of fruit. Even moderate pruning stimulates water sprout growth and rapid terminal growth. Pruning cuts should remove branches that rub or are too long, water sprouts, and damaged wood.

Cherry

Tart (sour or pie) cherry trees tend to be brittle and produce narrow crotches so spreading scaffold branches can improve the structure. Dense growth may develop in the top so thinning out is necessary to prevent the lower wood from being heavily shaded. Sweet cherry trees are susceptible to winter injury, especially in the wood where crotches are narrow, so spreading scaffolds is important. Grow young trees with a dominate leader and keep a balance in the rate of growth of scaffolds branches. Heading back scaffolds may be necessary to promote shoot growth.

Peach

Peach and nectarine trees are pruned alike. Both kinds bear their fruit on 1-year-old wood. This growth is stimulated by pruning out more wood than for other kinds of fruit trees. Small branches that are heavily shaded and crowded should be removed. Prune the most in the top of the tree and at the ends of the scaffolds. Diseased branches should be removed whenever possible without destroying healthy fruiting wood.

Plum and Prune

Only light pruning is necessary when trees are pruned annually. Use thinning out type pruning throughout the tree to promote new branch and spur growth

Apricot

On young and bearing trees, long slender branches should be headed back to laterals that are growing in an outward direction. Small wood on trees should be thinned out to stimulate annual formation of new wood to maintain young bearing areas.

Pruning Neglected Trees

A neglected fruit tree that has not been pruned for several years, if at all, has branches causing heavy shading so fruit is produced only on the outer branches. The tree is generally too tall; therefore, pruning, pest control, and harvesting are difficult. However, if the tree is moderately healthy and has some strong scaffold branches, it may have potential to bear fruit for several years.

By making decisions and pruning cuts in four stages, a neglected tree may be revitalized. Study your tree to identify some of the major problems.

- Prune wood around the trunk area and near the ground so you have best visibility of the tree.
  - A. Remove all sucker growth around the trunk by cutting as close as possible to the point of origin.
  - B. Remove all branches that hang below a 4-foot level. Prune them off at the supporting limb.
- Stand back and study the tree again and decide the cut to make next.
  - A. Retain scaffolds that are growing away from the tree center at wide angles with the trunk (Figure 11). Scaffolds should be positioned on different sides of the tree for good distribution of the fruit crop.

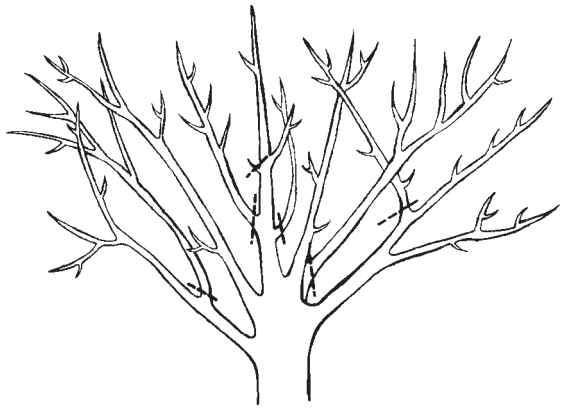

Figure 11. **Neglected fruit tree before pruning.**

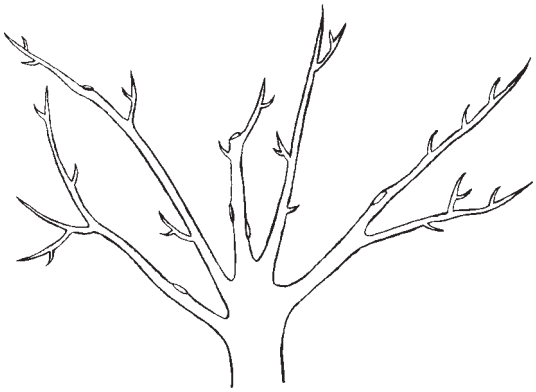

Figure 12. **Neglected fruit tree after pruning.**

B. Remove scaffold branches that are crowded, growing vertically, and growing too close together causing heavy shade (Figure 12). A chainsaw may be necessary to make smooth cuts in close spaces. The specific limbs you remove usually are not as important as the fact that they are removed to increase light penetration into the center portions of the tree.

- Lower the height of the tree to a desired level for easy care. Determine the approximate height you would like to have the tree, then cut the tall branches off at supporting horizontal branches (Figure 13 and 14). Reduce the spread of the tree in the same manner.
- From the remaining branches, thin out branches that cross over, hang down, are too long or too close together, and are damaged or diseased.

Two seasons may be necessary to fully prune a neglected tree. Not more than one-third of the total wood in an apple tree should be removed in one pruning season.

Guides for pruning other kinds of fruit trees are:

- Peaches may be pruned to one-half of the total wood.
- Pears should not have more than about one-tenth the total wood removed at any one time.
- Old plum trees will not produce new shoots readily so renovation should be by heading back at secondary branches or shoots rather than bulk thinning out.

Excessive pruning on any fruit tree at one time may cause the tree to fail to bear fruit for 1 or 2 seasons. Above all, don't be afraid to prune. Develop a mental picture of a well-formed tree and use it as a guide as you prune. No two people are likely to prune a tree exactly the same way but the objectives in pruning should be observed.

Figure 13. **Scaffold branch of neglected tree before pruning.**

Figure 14. **Scaffold branch of a neglected tree after pruning.**

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