Training Young Pecan Trees

Guide H-605

Revised by Richard Heerema[1]

Cooperative Extension Service • College of Agricultural, Consumer and Environmental Sciences

THE IMPORTANCE OF TREE TRAINING

The first five years of a pecan tree's growth are the most important for developing canopy branch framework. Structural developments in the tree during these years will be evident for the rest of the tree's life. There are few things pecan growers can do that have longer-lasting effects in an orchard than training young trees. The development of the tree structure should be done carefully with a minimal amount of pruning.

CENTRAL LEADER PRUNING SYSTEM

Considerable planning is required to properly train and prune young trees. To develop a medium-sized, strong, wind-resistant tree for New Mexico, use a "central leader" or "modified central leader" system with well-spaced and widely angled scaffold limbs emerging in a spiral.

The size and shape of the mechanical equipment that will eventually be used for orchard management and nut harvest should influence the training program you choose. As you train your trees, keep a mental image of the ideally structured tree and try to shape each tree to this pattern. No two trees are alike and very few will conform exactly to the ideal, but it will serve as a standard.

Pruning and Nut Production

The type and amount of training and pruning that should be used can be determined, to a considerable extent, by the ultimate use of the tree. Early nut production is directly related to the amount of pruning; trees subjected to less pruning will produce earlier than more heavily pruned trees. Backyard growers may be willing to sacrifice some early nut production in order to have an aesthetically well-shaped tree. However, commercial growers are more likely to compromise some structural development and form to obtain early production from their trees.

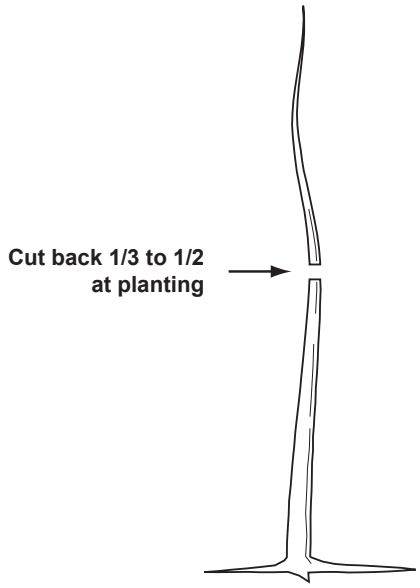

Figure 1. **When planting dormant nursery trees, prune away the top 1/3 to 1/2 of the previous season's growth to produce a whip 36–42 inches tall.**

There are several pruning methods commonly used for training young pecan trees. Heading back, branch selection, tip pruning, and pinching are all good methods and should be practiced during the first few years when establishment of new pecan trees and proper training are critical.

Selecting and Developing the Central Leader

If planting dormant nursery trees, prune away the top 1/3 to 1/2 of the previous season's growth at planting (most commercial nurseries will do this cut for you; Figure 1). This usually results in a whip 36–42 inches tall. Pruning with this "heading cut"

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encourages vigorous, upright shoot growth the following spring from the two or three nodes immediately below the cut-back point, allowing you to select a strong central leader a year later. Sometimes newly planted trees can start very slowly during the first growing season. If growth has not begun by July, cut back further to 12 inches above the patch bud or graft union to hopefully force growth in the first season.

Each dormant season for the first four or five years after planting (depending on rate of tree development), the strongest, most vigorous shoot that grew at the top of the tree in the previous growing season (just below the heading cut made a year earlier) should be selected to continue the central leader development. Prune away 1/3 to 1/2 of the selected central leader shoot with a heading cut, only removing growth from the previous growing season (Figures 2 through 5). Do not make heading cuts on any other shoots on the tree since this could cause a second leader to develop on the tree. All other strong shoots at the top of the tree should be removed completely (using "thinning cuts") if they are longer or higher than the selected central leader that has been headed back.

If there are two upright trunks (leaders) of similar size and vigor giving a tree a "Y" or "V" shape, there is a risk that splitting may occur at the junction of the two trunks. It is very important to remove one of the two trunks as early in the tree's life as possible. Figure 6 shows how to prune a Y-shaped tree.

Selecting and Developing Scaffold Branches

At each node along the central leader there are up to three buds: the primary, secondary, and tertiary buds. The primary bud is easily identified because it is the largest of the buds at a node (Figure 7). Sequentially, the primary, secondary, and tertiary buds become smaller in size and have wider angles relative to the shoot axis. The secondary and tertiary buds typically do not grow if the primary bud is allowed to grow. Primary buds usually produce shoots with narrower crotch angles than secondary or tertiary buds, and as a result they can produce weaker scaffolds. The central leader should always grow from a primary bud (because of primary buds' natural tendency to produce straight, upright growth). However, the dormant primary buds in potential scaffold positions along the central leader

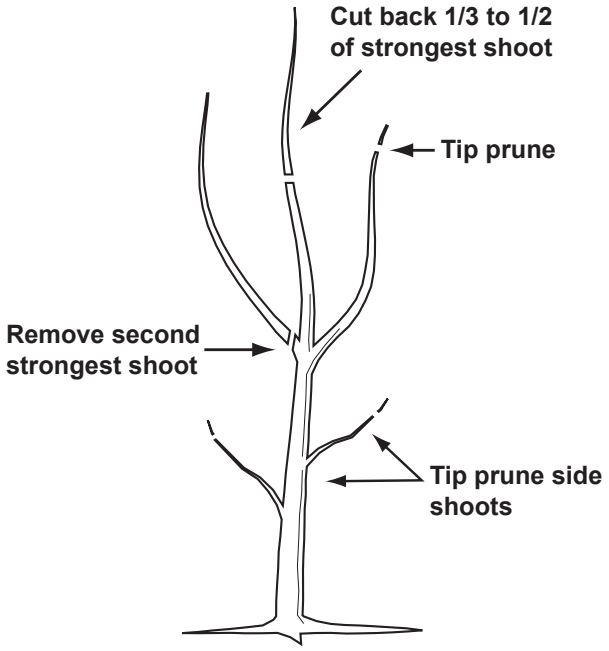

Figure 2. **An example of pruning during the tree's first dormant season. Select the strongest shoot at the top of the tree and prune it back by 1/3 to 1/2. Remove any other strong shoots at the top. Any side shoots or branches that are 12–18 inches long should be tip pruned by removing or pinching the growing point at the branch end.**

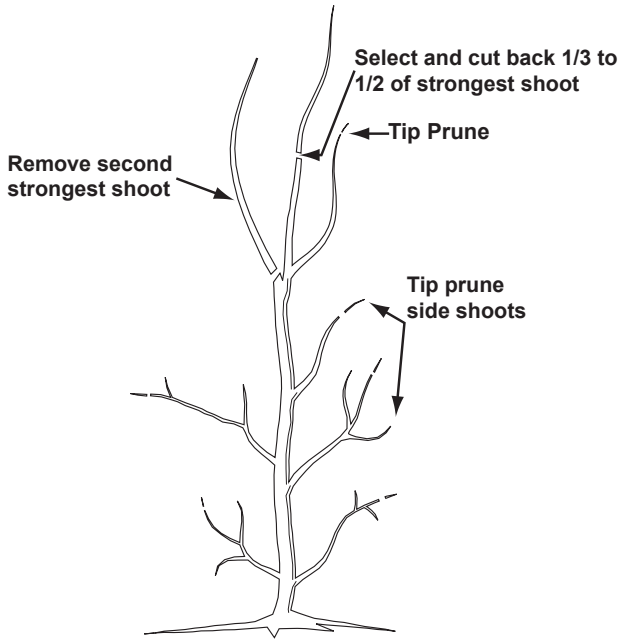

Figure 3. **An example of pruning during the tree's second dormant season. Any side shoots or branches that are 12–32 inches long should be tip pruned by removing or pinching the growing point at the branch end.**

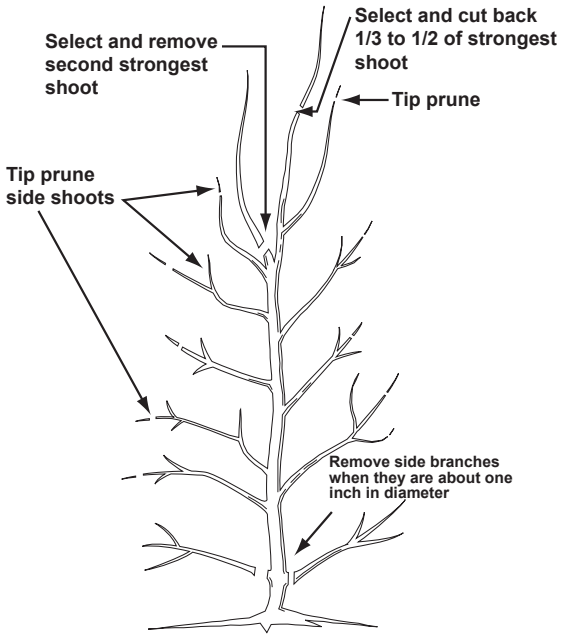

Figure 4. **An example of pruning during the tree's third dormant season. Any side branches that are at least 1 inch in diameter and that are less than about 4 feet from the ground should be removed completely. Smaller side shoots/branches should be tip pruned.**

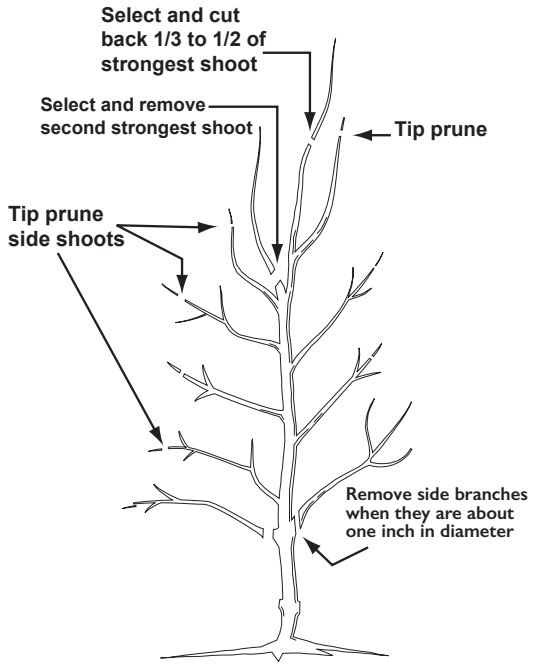

Figure 5. **An example of pruning during the tree's fourth dormant season. Any side branches that are at least 1 inch in diameter and that are less than about 4 feet from the ground should be removed completely. Smaller side shoots/branches should be tip pruned.**

may be pinched out to force the development of stronger, more widely angled shoots from the secondary buds. This can make it easier to select suitable scaffold branches in the next dormant season.

When selecting branches that will become permanent scaffold limbs, choose only those that form wide angles with the central leader (around 45° is ideal for the most common cultivars; Figure 8). Bark inclusions can form between the central leader and narrowly angled branches, causing a risk in the years to come for branch breakage in wind or with a heavy crop load. Do not select the first main lateral scaffold branches until the dormant period after the first year of growth.

When training a young pecan tree, the goal is to have 6–10 side branches spaced 8–14 inches apart and arranged in a spiral around the central leader. Mature trees with several small scaffold branches can be harvested more easily with a mechanical shaker than those with only a few large branches. The ideal height at which the lowest scaffold branch emerges from the central leader is determined by the type of harvesting equipment to be used. The lowest scaffold branch should not be higher than necessary for attaching the trunk shaker (generally about 4–5 feet should suffice). All side shoots developing below 4 feet that will not be selected for permanent scaffold limbs should be allowed to remain until they are 1 inch in diameter. Their purpose for the time being is to manufacture food by photosynthesis for central leader extension and girth development, and to protect the tender bark and cambial tissues of the young trunk from sunburn damage. In addition, these lower branches can produce some nuts while the tree is young. Once a low-growing side shoot reaches 1 inch or more in diameter, it should be pruned out completely (Figure 4). Figure 9 shows the full central leader pruning process.

Lateral branches sometimes grow in clusters instead of the ideal spiral arrangement. When this happens, select the most ideally located one in each branch cluster and prune out the others. Similarly, clusters of four to six shoots can develop at the end of a young limb, forming what is often termed a "crow's foot." These should be thinned out so only two or three shoots remain.

As small scaffold limbs develop along the trunk during the first four growing seasons, the shoots may be pinched in late spring or early summer to

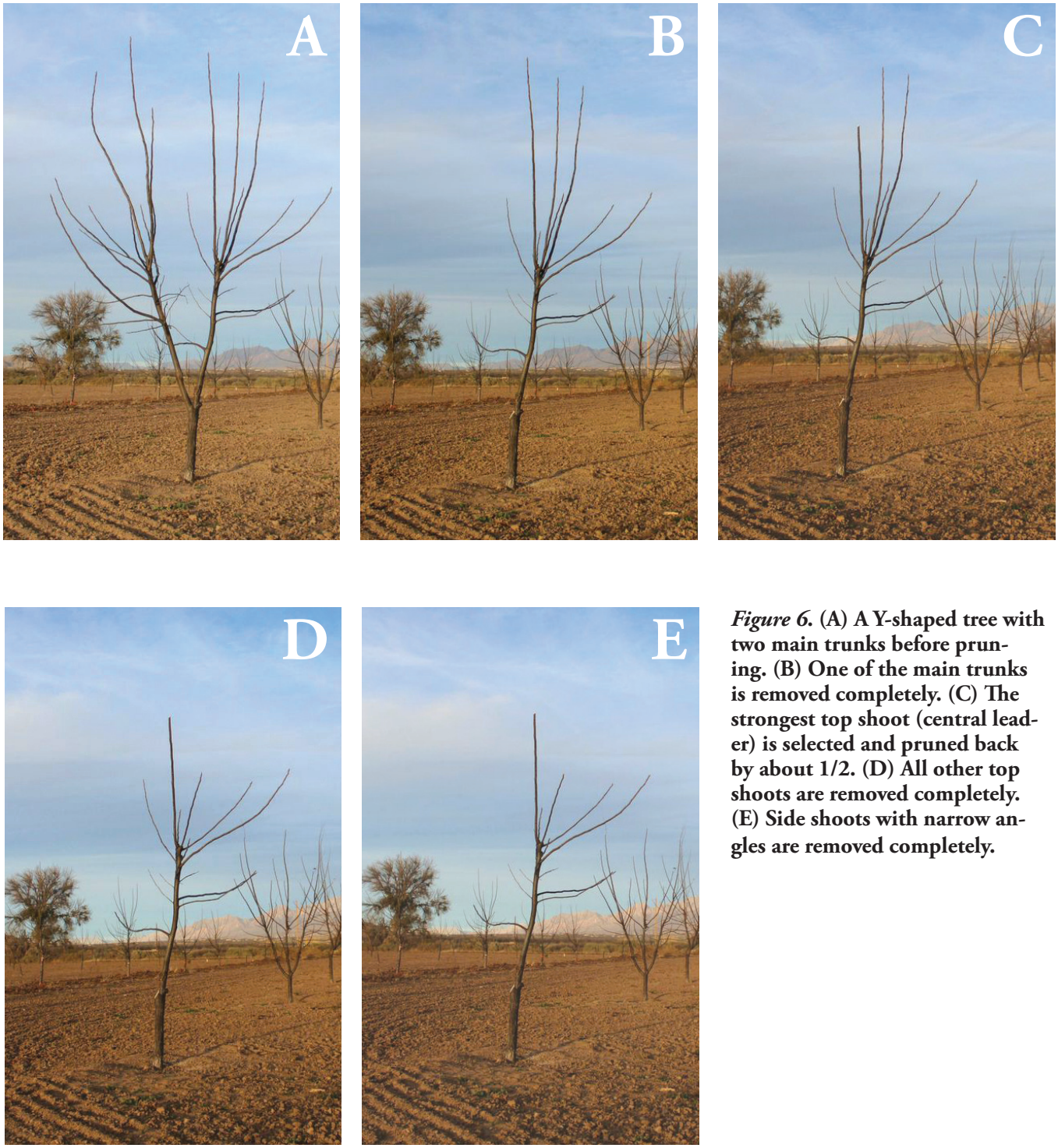

Figure 6. **(A) A Y-shaped tree with two main trunks before pruning. (B) One of the main trunks is removed completely. (C) The strongest top shoot (central leader) is selected and pruned back by about 1/2. (D) All other top shoots are removed completely. (E) Side shoots with narrow angles are removed completely.**

Figure 7. **Node with primary (larger) and secondary (smaller) buds.**

Figure 8. **For permanent scaffold limbs, select branches that form wide angles (around 45°) with the central leader, such as the lower branch in this photo.**

Figure 9. **(A) Tree before pruning. (B) The strongest top shoot (central leader) is selected and pruned back by about 1/2. (C) All other top shoots are removed completely. (D) Side shoots with narrow angles are removed completely.**

remove the soft, light-green growing points. The growing point can be easily broken off with your fingers. Do not pinch the growing point of the most vigorous shoots at the top of the tree, one of which will be selected as the central leader in the next dormant season. The lateral shoots should grow 12–18 inches before the growing point is removed during the first season, and 12–32 inches during the second, third, and fourth growing seasons. Pinching results in larger leaves on the lateral shoots. It inhibits development of large scaffold limbs during the first four years of the tree's life and encourages strong leader development.

Most cultivars produce extremely vigorous growth in the third, fourth, and fifth growing seasons. Tipping these vigorous shoots will produce many lateral branches; the most desirable can then be selected for further training. Tip pruning is done on permanent limbs by removing about 2 inches of terminal growth during the dormant season. Shoots are tip pruned only when they are 32 inches or longer (Figures 2 through 5). This practice stimulates the development of numerous small lateral shoots. Tip pruning brings pecan trees into commercial bearing at an earlier age and encourages central leader development. It has been recommended to tip prune trees until the sixth or seventh year.

CONCLUSION

Training and pruning pecan trees should be a regular part of your orchard management work. A proper pruning/training regimen that is initiated early in the tree's life will have beneficial and long-lasting effects.

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Notes

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