

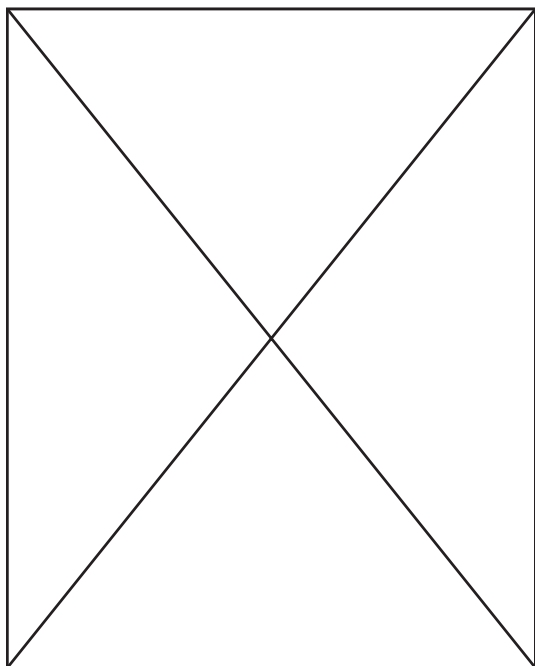
# Pruning & Training

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## Introduction

This is a description of cherimoya training and pruning as practiced in a commercial California orchard. Commercial fruit growers throughout the world use different techniques, some of which are undoubtedly superior to those described herein.

Many of these practices have been loosely adapted from the production of other deciduous fruit trees; indeed, there are many similarities with temperate fruit species.

Casual cherimoya growers or foreign orchardists, or anyone for that matter, certainly should not take the processes described in this article as gospel.

These techniques can be improved. It is hoped that they will serve as points to be addressed by others who will refine them, and the process of experimenting will provide growers with superior and more efficient ways to train and prune trees in a commercial cherimoya orchard.



# Pruning

## Why Prune?

The natural growth characteristics of the cherimoya tree seem to make it necessary for growers to embark on a pruning program early in the tree's life. The cherimoya tree is a vigorous grower when planted in a favorable location. This attribute, combined with a tendency toward limb breakage and splitting can have disastrous results if left unchecked.

An added consideration to a grower's pruning approach is the grove location. It can be advantageous and sometimes absolutely necessary to keep tree foliage open and cropped back until a sturdy trunk and scaffold limb development is achieved if the grove is in an exposed, windy environment. This approach can reduce fruit production in the short term, but can be very worthwhile in the long term.

Just as the individual microclimate may dictate one's pruning program, individual varieties can also impact the pruning technique. The C.C.A. pruning trial, now in its third year, has shown differences in how the Bays variety responds to different pruning techniques and severity when compared to the White variety.

Preliminary results indicate that the Bays is significantly more sensitive to different pruning regimes than is the White. This sensitivity shows itself directly in fruit production and quality.

Growers should expect very different tree growth responses in commercial plantings versus backyard or solitary tree plantings. If given open space and full sunlight, the cherimoya tree will grow into a spreading tree form requiring a minimum amount of pruning and shaping.

This approach usually results in a very attractive tree, but upon closer inspection, one discovers a considerable amount of twig and branch dieback on the interior of the tree due to natural shading.

In a typical orchard situation with tree spacing of 15' by 20', trees soon begin competing with each other for available sunlight. The problem of interior light deprivation happens with the first 5 to 9 years, if not sooner.

If a conscientious pruning program is not adopted in the early years of development, one soon will experience trees sprouting limbs skyward which aggravates the interior shade problems and which may lead to limb and trunk splitting.

Cherimoya trees share several growth characteristics with other fruit trees. Important among these is the relationship of pruning to fruit quality. Although pruning can reduce the total number of fruit produced; if done properly, it results in larger, more uniform, and higher quality fruit.

***Trees will often compensate for pruned limbs by setting more fruit on the remaining limbs.***



*Over laden branch splits tree trunk.*



Proper sunlight penetration and canopy structure will also help with pest management. Ant, snail and mealy bug infestations will be minimized and control measures simplified if tree uniformity and structure are maintained through prudent pruning practices.

It appears that the flowering tendencies of the cherimoya can be somewhat controlled and manipulated by the timing of pruning.

Although not well understood or documented at this time, it is claimed that early pruned trees tend to respond by flowering sooner.

The viability and maturity aspects of this procedure are still in question. It is known, however, that a properly trained and pruned tree dramatically increases the accessibility of flowers to field workers.

During the process of hand pollination accessibility can greatly enhance fruit set and uniformity.

This advantage carries over into the realm of a safer working environment, especially in hill-side plantings, as access is made easier, and the need for ladder work is minimized.



*Newly planted tree.*

***Traditional cherimoya grove management includes a scheduled once or twice per year pruning approach.***

The most thorough pruning is carried out in the late spring/early summer as the harvest season winds down. As the trees naturally drop their leaves at this time, the major tree shaping and manicuring should be undertaken.

The second round of pruning is not always necessary, but if needed, it is done in

the early fall, before inclement weather begins.

The sole purpose of this event is to trim out excessively long limbs, dead wood, and other poor growth which might jeopardize the tree health or crop during the winter months.

***Growers must be very careful at this time not to trim off too much foliage.***

Excessive pruning may result in sunburning of exposed fruit or encourage vegetative growth which can adversely affect fruit development and maturity.



*Cherimoya trials at UCLA. The germplasm in the planting was eventually transferred to the South Coast Field Station in Orange County when the land was required for the construction of more classrooms.*



*A Cherimoya tree planted in trials at South Coast Field Station in Orange County, California.*



# Training

## Basic Training Concepts

At planting (preferably in spring), if trees have an unbranched trunk greater than 2 feet tall, the tree should be pruned back. This should induce other buds along the trunk to shoot.

***Always remove leaves at positions where new shoots are required.***

If there are lower branches with weak crotches (less than 45°, or greater than 90°), these should also be removed.

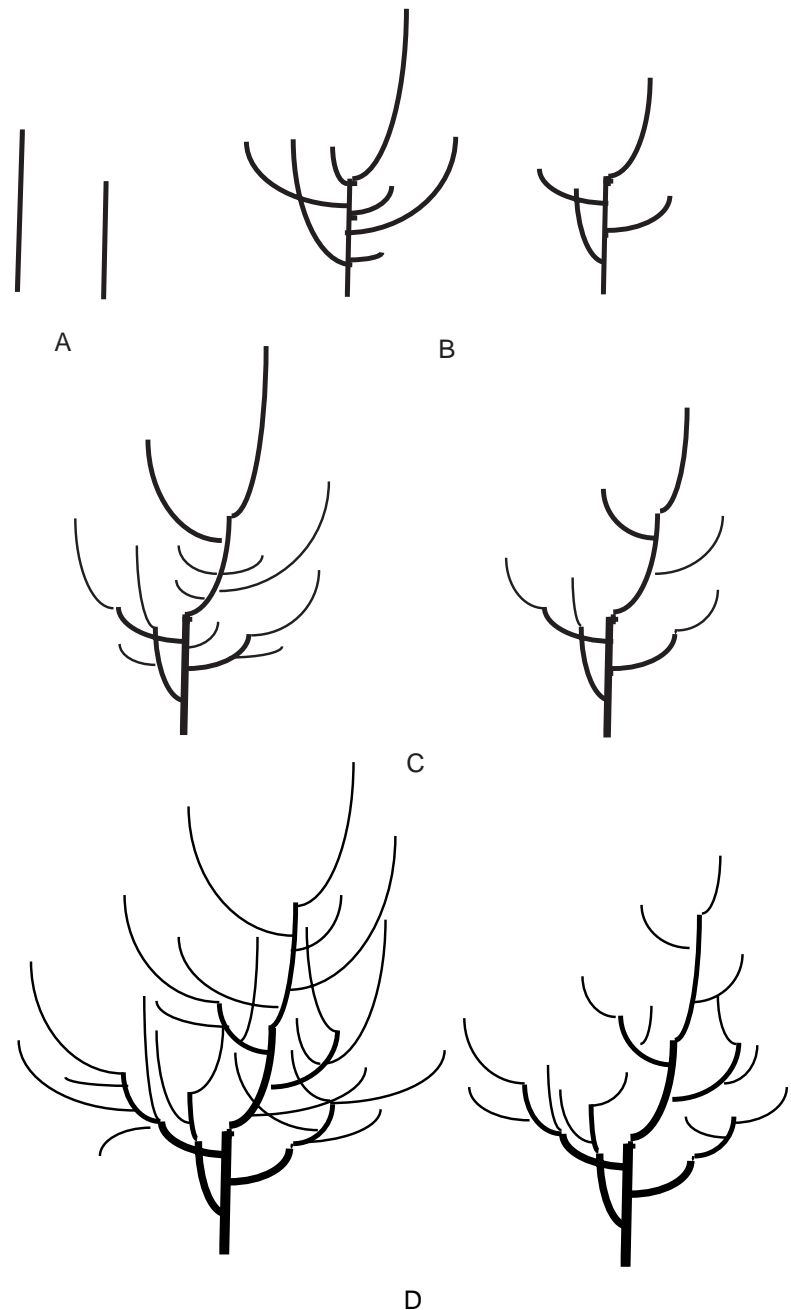
During the first summer, one shoot is encouraged to dominate by lightly pinching back the other shoots and loosely tying the main shoot to the stake. This shoot (leader) will become the tree trunk.

About every three months some pruning can be performed to rapidly create a large framework. Select primary scaffolds beginning with the lowest facing the prevailing winds.

Select additional scaffolds, upward along the leader at intervals of several inches or more, forming a spiral pattern around the trunk.

Prune these scaffolds to 18 inches in length, in order to maintain the central leader. Remove strong unsymmetrical growth not required as the leader or scaffold branches.

Figure 1. Training the young cherimoya tree.



- A. At planting, the tree is headed back to 2 feet.
- B. After the first year's growth, the tree is pruned to primary scaffolds, encouraging a central leader.
- C. After the second year's growth, the secondary scaffolds are selected while still encouraging the central leader.
- D. After the third year, the tertiary scaffolds have been developed. In future years, further pruning will be done to retain tree height at a convenient level for pollinating and harvesting and to remove broken limbs.



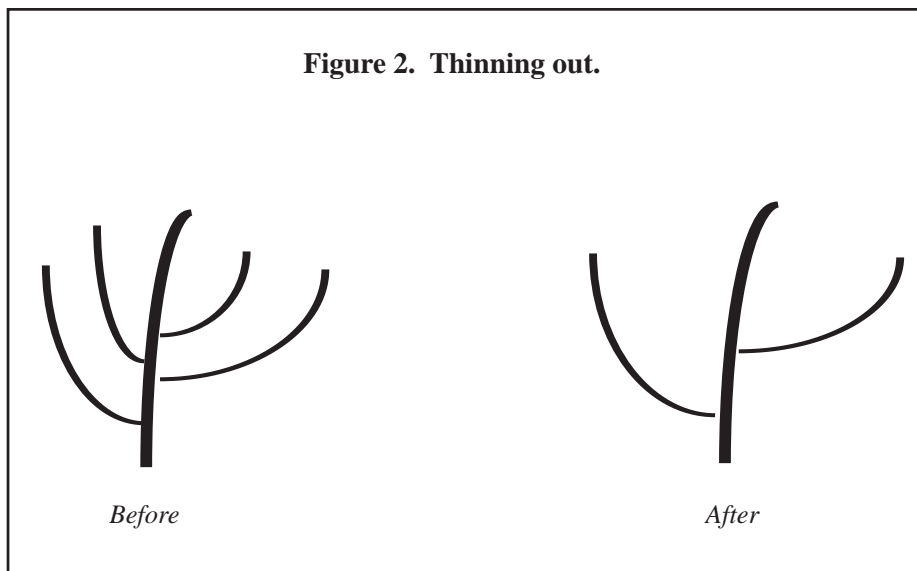
**Also remove any limbs  
with weak crotches.**

The position of scaffold branches can be selected by removing a leaf in the desired position, uncovering the bud.

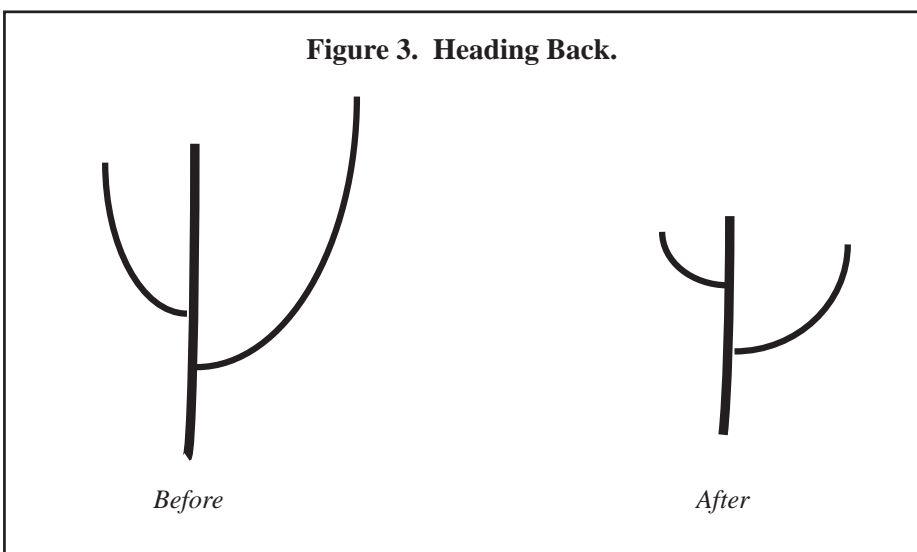
In subsequent years continue to select primary scaffold branches until four to six are present. Then allow the leader to become the topmost scaffold.

Each time the scaffolds are pruned, they tend to produce two strong end shoots. One or two weaker shoots might also form, these should be removed. As the pattern continues, the tree will gradually open up.

**Figure 2. Thinning out.**

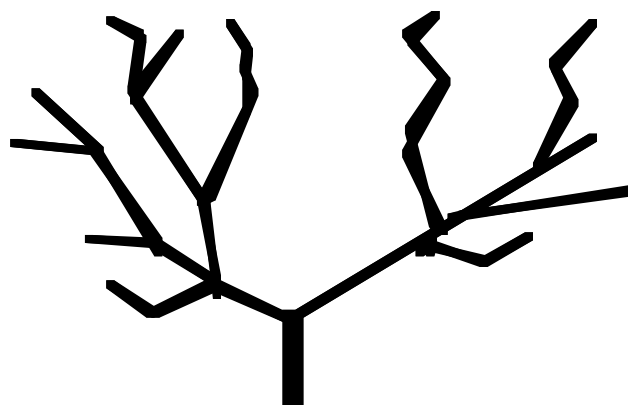


**Figure 3. Heading Back.**



# Training versus Pruning

Figure 4. An example of the open vase or goblet shape of pruning.



The training and pruning of trees is a dwarfing process that should be done with a specific reason in mind. Training is a process of developing a tree's structure for future production.

In the first three to four years training should be the primary goal rather than fruit production. The pruning of bearing trees is for maintaining fruit production with a minimum of fruit scarring and sunburn and to adjust fruit size and load, as well as facilitating hand pollination.

Untrained cherimoyas will produce good yields, although there will be a tendency to scarred fruit from branch rubbing and weak branches due to severely angled crotches.

The recommended method of training atemoya in Australia is the open goblet system. This system initially encourages several upright leaders to form rather than a central leader.

This practice is followed in order to dissipate vigorous growth that rapidly tends to create a large tree.

In most countries that grow the cherimoya, however, a modified central leader system is followed in order to create a strong tree that will carry fruit without splitting the tree.

The eventual shape of the tree should be an open-center, which allows for good light penetration, but insures some shading of the fruit for sun protection. But the foundation of the tree should commence with a central leader.

With this system, 4 to 6 primary scaffolds are developed from the main trunk before the open center is allowed to develop. Subsequent pruning of the mature cherimoya will result in the opening of the tree's center.

At pruning time, weak and broken limbs, interfering branches and unneeded water sprouts are also removed.



# Pruning Bearing Age Trees



***A dead stub can provide an entry for pathogens.***

Because the tip of the branch controls lateral bud break on the branch, heading back encourages the latent buds to grow.

This type of cut produces a bushy, compact plant, with reduced light penetration to the interior.

Thinning out is the complete removal of a branch to a lateral or main trunk. This type of cut encourages longer growth of the remaining terminal branches. The cut usually results in a larger tree with improved sun-light penetration.

***This branch could be removed to open up the center of the tree and achieve a vase tree form.***



*A three limb vase system*

How heavily to prune depends on the variety, and the tree's vigor according to the tree spacing, soil and climate. Unpruned trees initially bear substantially more fruit, but gradually the canopy becomes crowded, the inside becomes devoid of leaves and fruit, and production moves to the outside of the canopy. This makes it more difficult to pollinate and harvest, and encourages more damage to fruit from branch rubbing.

From the third or fourth year from planting the goal should be to prune about 6 to 8 inches from the new growth. This should be done in the spring prior to bloom. If there is excessive growth during the summer, a light fall pruning may be necessary. Insuring heavy cropping, though, will retard vegetative growth.

Each year, branches that are crowding the center need to be thinned out, as well as dead wood. Fruiting wood that has grown more than 18 inches from the scaffolds also needs to be headed back in order to prevent the limbs from breaking with the weight of fruit.

The best level of pruning is going to be determined by experience. The severity of pruning will vary according to the lateral growth each season and cropping level. Other guidelines are to avoid too much shading within the canopy and to allow enough room between branches so that fruit will set clear of limbs and other fruit.





# Pruning Equipment

## Basic Pruning Tools

In pruning, three tools are usually needed: pruning shears, pruning saw and often an orchard ladder.

### Shears

#### Pruning Shears

Pruning shears commonly have two blades: a single-beveled cutting blade and a hooked or curved noncutting blade. The head usually contains a bumper to reduce pruner fatigue.

Handles are of hardwood or metal and the overall shears (head and handles) come in lengths up to 36 inches.

#### Long Handled Shears

The long-handled pruning shears are used to make cuts up to 1 inch in diameter and are often called “loppers.”

#### Hand Shears

Smaller hand shears can be used on young trees and limbs of 1/2-inch diameter or smaller.

#### Pole Pruners

Pole pruners with a shear head mounted on an 8 to 12 foot pole also are available as an alternative to using a ladder for access to the upper portion of large trees. The cutting blade is operated by a lever-and-rope mechanism.

### Saws

#### Hand Saws

Pruning saws have a wooden handle with an 8-15-inch curved saw blade. The teeth are wide set (about 6 teeth per inch) so that green wood can be cut easily.

#### Pole Saws

Pole saws ( a regular pruning saw on a long pole) are sometimes used for making saw cuts in large trees rather than using a ladder.

### Ladders

Orchard ladders are wood or aluminum and commonly manufactured in eve-foot lengths, such as 8, 10, and 12 feet. They are three-legged (tripod) with the third or positioning leg hinged at the top to the other two.

***Do not use four-legged ladders for tree pruning — they lack stability on uneven ground surfaces.***

***Do not use tripod orchard ladders on cement or other hard, smooth surfaces because the single leg will slide and the ladder will collapse.***

Increasing in use is pneumatic pruning loppers operated off an air compressor. The compressor can be driven off the PTO of an orchard tractor. With an extension pole pruning is speeded up by eliminating the need for ladders.



# References

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