How to Prune Young Shade Trees

The sketch of the tree on the right represents what we like shade trees to look like 15 years or so after planting: a tall, straight trunk and a full, healthy crown with strong, well-spaced branches … a tree that casts a broad expanse of sheltering shade, that resists damage by wind and ice, that is easy to maintain.

The sketch at the left also represents a 15-year-old tree. But it looks more like a big, rambling bush than a well-groomed shade tree. Its low-growing branches obscure streets, driveways, and walks, posing traffic hazards. Many branches have been damaged during storms, and weak, unsightly shoots sprout in abundance. Maintenance is badly needed and will now be expensive.

What made the difference?

The tree at the right was properly pruned when it was young. The tree at the left was neglected.

This bulletin explains how pruning young shade trees is a simple, straight-forward task. It is a job that needs to be done, whether by you for the trees in your yard or by your community for the trees on public property. In any case, proper pruning will save money in the long run and give you safer, more beautiful, healthy, easy-to-maintain trees.

As the twig is bent, so grows the tree.” This insightful old bromide about children might just as well serve as the cardinal principle for pruning young shade trees. What you do to your tree in its first few years of life will affect its shade, strength, and even its life span. In importance, early pruning must rank just after selecting the right tree for the site and careful planting.
A Tale of Two Trees

One happy day in May the all-American dream came true for two families. Brand new houses of their own in the suburbs. The good life for their kids. New friends and neighbors. More space and comfort. And good investments, too.

Now, it happened that both families loved trees, so they each promptly planted one to commemorate their new starts in life. Unknown to each other, both families planted trees that were the same species and the same age.

Looking ahead, we would expect the twin trees to eventually make a nice contribution to the neighborhood, each spreading its shade to grateful residents for generations to come. But, it was not to be. Unfortunately, Family A had the misguided belief that a tree should be left alone, just as it is in the forest. Family B knew better. They realized that a tree in the yard or along a street is not growing there because ecological sorting matched its needs to the site. It is there because it was planted there; nature’s method was circumvented.

FAMILY A’S TREE — NOT PRUNED WHEN YOUNG

FAMILY B’S TREE — PRUNED WHEN YOUNG

AT PLANTING

Family A didn’t ask for planting instructions. They knew how to plant a tree. When that was done, they believed their work was done.

Actually, they were partly correct. You may receive instructions to the contrary, but little should be done to the tree at this stage. In most cases, it is best to leave all the leaf surface possible to manufacture food that will build a larger root system. It has been found that both roots and top will be larger after one year if left unpruned.

After 3-4 years

Family A’s tree is now complete. Advantage of forest neighbors to shield it from wind, sunlight or shade, and it certainly does have the advantage of forest neighbors to shield it from wind, prune its lower branches, and form the outline of its crown. In short, it needs help.

AT PLANTING

Family B was amazed to see their tree survive a major windstorm one summer day. While many other trees in the neighborhood suffered split tops and broken limbs, theirs stood strong and firm. Proper pruning gave strength in the tree. And what do you know? Just before they moved recently, the realtor told them it was their trees that helped sell the property so quickly.

After 5-7 years

FAMILY A

By the time many transplants are in their new homes for two to four growing seasons, sprouts and suckers may appear. The root suckers protruding near the base sap strength from the tree. The sprouts are disproportionally vigorous and weakly attached to the tree. And look at the broken limb. By now, it has sprouted numerous branches just below the break — too many, in fact.

After 3-4 years

Root growth should be well on its way to anchoring the transplant and expanding to the size necessary to nourish the growing branches. Family B decides to cut off the root suckers and sprouts in the crown. Excessive branches are thinned to reduce competition for light, water, and nutrients, and a codominant leader is removed. A few of the lowest limbs are also removed, but others are temporarily left to help the trunk develop more taper and strength. Growth is far enough along to reveal branches that rub or are growing in an undesirable direction. Narrow angles are also eliminated for reasons explained on page 4.

After 5-7 years

FAMILY B

The baby is quickly becoming an adult. The results of not making corrections early in life are now quite visible, although some are still not obvious to the untrained eye. To the more careful observer, the form of the future crown is apparent.

At planting

Family B also pruned its lower branches, and formed the outline of its crown. Advantage of forest neighbors to shield it from wind, sunlight or shade, and it certainly does have the advantage of forest neighbors to shield it from wind, prune its lower branches, and form the outline of its crown. In short, it needs help.

15 years after planting

Lower limbs are pruned off to “raise” the bottom of the crown well out of the way of human heads. The lowest limbs are now permanent. An important fact is recognized here. Branches do not move upward as a tree grows taller. The center of a branch at 5 feet will always be at 5 feet.

15 years after planting

Higher up, a few overzealous branches are cut back so they do not protrude beyond the outline of the crown. A branch here or there is removed for more even spacing, but basically the job of sculpturing the tree is now complete.

Reasons explained on page 4.
Pruning for Strength

The first guide to pruning a young shade tree is to have a clear understanding about what pruning can do for the tree — and you.

For example, we know to prune modestly — if at all — when transplanting a new tree. An immediate objective must be to strengthen and expand the root system which is often reduced by 80-90 percent during transplanting. To meet this objective, as much as possible of the leaf surface (the tree’s food factory) is left intact. Only damaged or dead limbs should be removed.

**BRANCH ANGLES AND SIZE**

Narrow angles signal a point of future weakness, whether in the trunk or crown. As the two branches grow, neither has sufficient space to add the wood needed for strength. Instead, they grow against each other. The effect is similar to hammering in a wedge. To prevent this and the expensive problems that are sure to follow, simply remove one of the two branches. For strength, the ideal branching angle approximates 10 or 2 o’clock.

Lateral branches should be no more than one-half to three-fourths the diameter of the trunk. As the trunk grows, it will strengthen the joint by adding wood around the branch — like a dowel in a chair leg.

**CENTER OF GRAVITY**

Young trees deformed by wind may be corrected by pruning. Move the tree’s center of gravity to a point more central over the trunk by cutting back the leader and laterals on the downwind side (or direction of lean) to more upright branches.

Caution: When pruning diseased trees, dip your shears in household bleach before storing or moving to the next tree. Be sure to rinse and wipe dry before storage.

After the first year, pruning should begin in earnest. Pruning with strength as the objective is the best way to avoid weak branches later on and to prevent expensive corrections that will otherwise become necessary.

**What to look for:**

**WATERSPROUTS AND SUCKERS**

These “parasite” sprouts can occur at the base or inside the crown. They are rapidly growing, weakly attached, and upright. Usually they use more energy than they return to the tree. It is best to remove them as soon as possible when it is obvious they are vigorous sprouts.

**RUBBING BRANCHES**

Branches that rub result in wounds, decay, and notches. Remove one of the offending branches.

**TEMPORARY BRANCHES**

Branches below the lowest permanent branch can protect young bark from injury from the sun and add taper and strength to the trunk. Particularly in lawn plantings where lower limbs do not block passage or tempt vandals, the limbs may be left for three to four years after planting. Then remove over the next two to three years, beginning with the larger temporaries. Don’t let the temporary branches become large and vigorous.

When a crown is dense, look for limbs that turn inward, and those that extend beyond the natural outline of the crown. Prune at the trunk or down to an appropriate lateral branch. Overpruning can damage or even kill your tree. Always maintain at least three-fourths of the tree as the live crown.

**THEME:**

Thinning and spacing

Most trees benefit from thinning — removing a portion of the limbs that compete for space and light. Evenly spaced laterals, 8-12 inches apart in the young tree, is a good rule of thumb to help ensure an ideal “ladder” at maturity. Of course, this will vary by species.

Try to imagine what the tree will look like when it is larger. If a limb is headed toward trouble (the house, walkway, sign, etc.), remove as early as possible in the life of the tree. Closure of the wound will be more complete when the limb is small, and it is less trouble and expense. Remember, limbs do not move upward as a tree grows in height.

Protect the leader from competition. In trees with co-dominant leaders, remove the one with a crook or other defects, or that creates a lopsided appearance.

Caution: Do not prune too high too quickly. To lift the crown, remove lower limbs throughout several years. No more than 25 percent of the live crown should ever be removed in an annual pruning season.
Keys to Good Pruning

1. Prune early in the life of the tree so pruning wounds are small and so growth goes where you want it.
2. Begin your visual inspection at the top of the tree and work downward.
3. Identify the best leader and lateral branches (scaffold limbs) before you begin pruning and remove defective parts before pruning for form.
4. Don’t worry about protecting pruning cuts. For aesthetics, you may feel better painting larger wounds with a neutral-color tree paint, but the evidence is that it does not prevent or reduce decay.
5. Keep your tools sharp. One-hand pruning shears with curved blades (secateurs) work best on young trees.
6. Make safety the No. 1 priority. For high branches use a pole pruner. A major job on a big tree should be done by a professional arborist.

WHEN TO PRUNE

This depends to a large extent on why you prune. Light pruning and the removal of dead wood can be done any time. Otherwise, here are some guidelines, but recognize that individual species may differ.

WINTER
Pruning during dormancy is the most common practice. It results in a vigorous burst of new growth in the spring and should be used if that is the desired effect. It is usually best to wait until the coldest part of winter has passed. Some species, such as maple, walnuts, and birches, may “bleed” when the sap begins to flow. This is not harmful and will cease when the tree leafs out.

SUMMER
To direct the growth by slowing the branches you don’t want or to slow or “dwarf” the development of a tree or branch, pruning should be done soon after seasonal growth is complete. The reason for the slowing effect is that you reduce the total leaf surface, thereby reducing the amount of food manufactured and sent to the roots for their development and next year’s growth of the crown.

FALL
Because decay fungi spread their spores profusely in the fall and healing of wounds seems to be slower on fall cuts, this is a good time to leave your pruning tools in storage.

FLOWERING TREES
If your purpose for pruning is to enhance flowering:

1. For trees or shrubs that bloom in winter, prune in winter.
2. For trees that bloom in spring from buds on year-old wood (e.g., dogwood and flowering fruit trees), prune when their flowers fade.

Pruning is a Vital Part of Any Urban Forestry Program

A survey conducted by American Forests showed that many of the nation’s urban forests are in serious trouble. To stem the decline of shade trees, more and more communities are engaging in vigorous planting programs. The magnitude of this effort may vary from a few dozen park trees in small towns to the annual planting of thousands of trees in large cities. In all cases, the investment is significant. American Forests suggests that 20 percent of an urban forestry budget should be directed at planting and early care. It follows that the early care of new trees is one of a community’s best ways to maximize its investment in planting. Systematic pruning of trees during the first several years of growth should be an integral part of the program.

A basic mission of the Tree City USA program is to encourage ongoing shade tree care. Early pruning is part of the care necessary for strong, healthy, beautiful trees. Of the four standards shown on the back page of this bulletin, time spent pruning young trees would contribute to Standard 3 as a portion of the comprehensive community forestry program. Within a tree maintenance program, urban foresters and arborists have suggested that the following steps be included:

1. Minimum pruning immediately after transplanting; within three years, pruning for strength and form; and every three years thereafter, pruning to lift the canopy of street trees (usually to 8 feet above sidewalks and 14 feet above residential streets).
2. Providing initial training and annual refresher training for crews doing the pruning.
3. Stressing tool sharpness and, if necessary, disinf ective methods.
4. Developing an inventory that is kept up to date with all maintenance operations, and future needs being noted, including pruning.
5. Monitor annually and prune on a five- to eight-year cycle.

FOR THE BEST START, START IN THE NURSERY

A good tree management program begins with selecting good trees. When choosing trees for city plantings along streets and in parks and other public places, you will want trees with a fairly substantial caliper even if they are initially more expensive. Some things to look for:

BARE-ROOT TREE: Abundant root growth, fibrous and numerous small roots, good color, moist.
SO SIMPLE, YET SO IGNORED

The wisdom of pruning young trees is often ignored, possibly because it is difficult to think ahead and envision what a tree will look like in the coming years. But pruning when the tree is small is well worth the effort. Here is what some professionals say about the need for more attention to pruning young trees:

You don’t want double leaders on your tree … If it’s a young tree, you can cut out one of these leaders. If it’s an old tree and it would ruin its good looks to take out one leader, you could hire a qualified arborist to cable the leaders together if they pose a threat to life or property.

– THE LATE CASS TURNBULL
The Complete Guide to Landscape Design, Renovation, and Maintenance

Just a few minutes with hand shears could solve a lot of problems later on.

– TOM WIENS, CERTIFIED ARBORIST

Arborists could do a great service and gain customers by going through new neighborhoods and pruning young trees.

– THE LATE ALEX SHIGO, TREE EXPERT AND AUTHOR