

Appendix D: TREE CARE and MAINTENANCE

Selecting Your Tree

Trees are for a lifetime, so it pays to spend time now making sure you get the best. In fact, several months before you plant is not too soon to start shopping. Here are four steps to help you make the right decisions:

1. Think clearly about the purpose of your new tree.
(Examples: shade, privacy, aesthetics, windbreak, etc.)
2. Write down the limitations of the site where you will be planting.
(Examples: overhead wires, confined root zone, dry climate, clay soil, etc.)
3. Select the species or cultivar to plant that best matches the above conditions you have identified.
4. Examine the trees before you buy, and buy for quality.

Buy only from reputable nurseries (local or mail order). Are they members of professional organizations such as the Mailorder Association of Nurseries or the American Association of Nurserymen? If local, do they have knowledgeable staff to answer questions and care for trees properly “behind the scenes?”

Look for These Physical Characteristics in Your Trees:

Trunk-

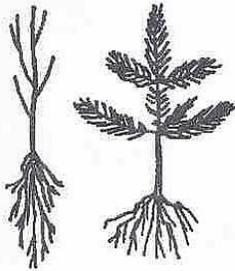
- Is it reasonably straight? Does the trunk taper nicely?
- Is the bark free of cuts and scrapes?
(Reject trees with wounds wider than $\frac{1}{4}$ the circumference of the trunk.)
- Are pruning wounds healed over?
Is it free of frost cracks, sunscald, swollen areas and evidence of disease or insect injury?

Trunk-

What is Caliper?

Trunk diameter on young trees is referred to as its caliper size. For standardization, this measurement is taken 6" above the ground on trees with a diameter of 4" or smaller, and 12" above the ground on larger planting stock. The diameter of larger trees is measured approximately 4 ½ feet above ground level and is expressed as diameter breast high (DBH).

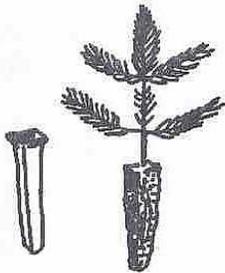
Bare Root Seedlings-



- Roots should be moist and fibrous.
- Deciduous seedlings up to 10" in height should have roots approximately equal to the stem length; from 12" – 24", look for roots approximately 10" – 12" long.

NOTE: Bare root trees of large sizes are also available, but at fewer and fewer nurseries. It may be worth locating a source, as this can often save you 30 to 50 percent of the cost. Careful storage is necessary to prevent drying and planting must be completed before dormancy ends. Success is best with species that continue stem elongation all summer, such as locust hackberry and elm.

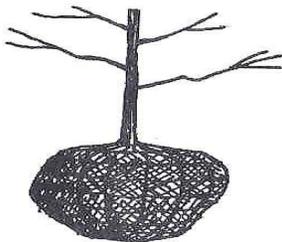
Containerized Seedlings-



- The soil plug should be moist and firm.
- Avoid tall, spindly tops. Well developed roots are more important than height of the seedling.

Roots-

- Is the root ball firm to the touch, especially near the trunk?
- Is the root ball adequate for the tree's size? (See Chart, Page 4)
- Are large, circling roots absent?
(Check this by feeling down into the top 3' or 4" of the pot.)
- Are pruned roots cut cleanly and no wider than an average finger?
- Are soil and roots joined tightly?



(B & B) Balled and Burlapped



Potted

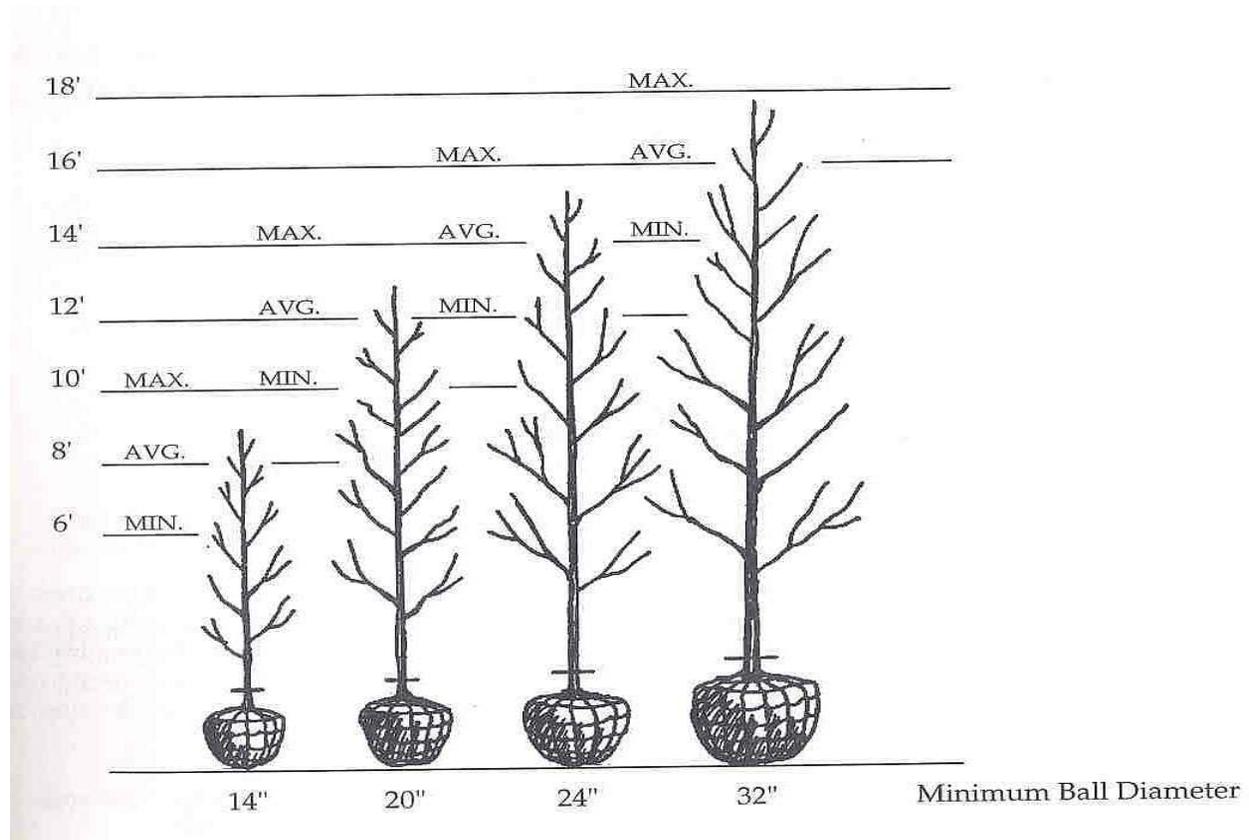
Crown/Branches

- Is the tree symmetrical?
- Is there a single, well developed leader?
- Are buds plump and healthy looking?
- Are branches well distributed around the trunk and considerably smaller than the trunk?
- Do branches approach the ideal spacing of 8"-12" apart and form at least a 45 degree angle with the trunk?

NOTE: Avoid trees that have been “headed back,” the undesirable practice of pruning off the ends of branches. This is sometimes done to reduce the size of an overgrown tree to meet specifications.

How to Check Proper Size and Root Ball Proportions

To reduce transplanting shock and assure that adequate feeding roots are moved with the tree, the American Association of Nurserymen has established standards for height-diameter relationships and root ball sizes. This chart illustrates these standards for most deciduous shade trees. A more complete range of sizes may be found in American Standard for Nursery Stock.



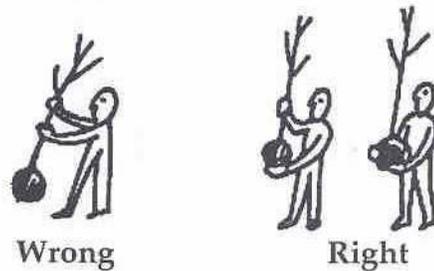
How to Plant a Tree So It Lives

The goal of tree planting is to have a vigorous, healthy tree that lives to the limits of its natural longevity. Achieving this goal begins with careful tree selection. Next, the tree must be handled carefully until it is safely installed in its new home.

Trees-Handle With Care

Trees are perishable products and must be treated accordingly. Reputable nursery operators know how to protect trees in shipment or while on display, but after that it is up to you. These two cardinal rules will help keep your trees alive until you get them into the ground.

1. **Carry trees carefully.** When transporting, load and unload gently, being careful not to break branches. Always provide support beneath balled or potted plants.



2. **Keep roots moist!** Depending on the trees and how long you must store them before planting, techniques to prevent drying vary. They include re-dampening the packing material around small bare root seedlings and storing in a refrigerator between 30- 40 degrees F. Bare root trees of all sizes may also be stored by placing the roots and their packing material under loose soil in a shallow trench. The garden often is a handy place to do this. While actually planting, continue to protect the roots from wind and sun by wrapping in wet burlap or carrying in a bucket of water, possibly with mud, moss or sawdust added.

Balled and burlapped or potted trees should be checked for dryness by finger length probing into the soil. Sprinkle or water if necessary. Then store them in a cool garage or shaded area out of the wind.

Tip: Buy early in the season to get the best selection of trees – then plant without delay.

Planting Bare Root Seedlings



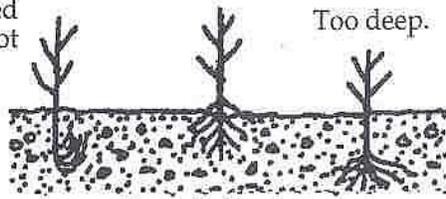
In light or sandy soil, a planting slot makes the job fast and easy. Planting small seedlings in a garden or other temporary spot for the first year is a way to assure better protection, watering and weed control until the seedling is larger. Then it may be transplanted to a permanent location.



In heavier (clay) soil or when planting larger bare root stock, it is best to use the shovel and hole method. This prevents soil compaction and glazing of the hole's sides, allowing new roots to spread more easily.

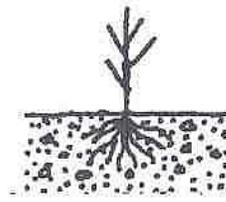
Avoid These Common Planting Errors:

J- or U- shaped roots. Hole not large enough.



Too deep.

Too shallow or soil washed away.



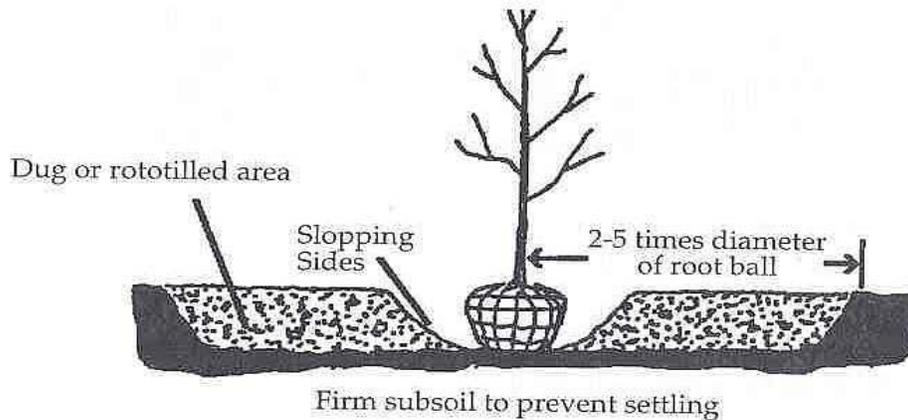
Roots spread down and outward. Soil level even with root collar (soil level where the seedling was grown in the nursery).

Planting Burlapped or Potted Trees

Recommendations for planting have evolved in recent years as more is learned about the nature of roots and urban soils. Local conditions make generalizations difficult, but here are some guidelines that reflect the latest opinions of tree experts:

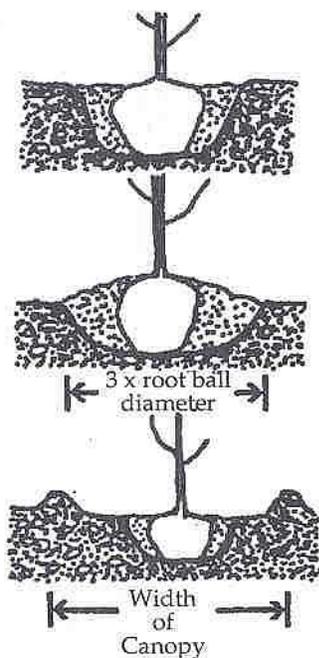
The Planting Hole

More than any other change in tree planting procedures is the new focus on the planting hole. It can be summed up by the saying, “Don’t plant a \$100 hole!” Proper preparation will encourage root growth rather than adding to the difficulties already challenging the young tree. Here’s the way to give your tree a boost toward rapid growth and recovery from transplant shock.



This method recognizes the fact that most roots spread through the top 12” of soil in a wide periphery around the tree. Therefore, slope the side of the hole and dig or deeply rototill an area around the hole at least twice the diameter of the ball or container. An area up to five times the diameter is recommended if the soil is particularly compacted, the roots of other trees will not be damaged, and space and aesthetics allow.

How Deep Should You Plant?



- Under normal conditions, root growth is best encouraged by planting even with the surrounding terrain.
- When wet conditions or heavy soil are problems, raising about 1/3 of the root ball above ground will aid the spread of lateral roots.
- In arid climates, a basin can be used to collect precious water.

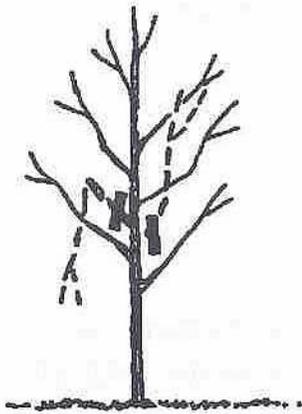
Filling the Hole

Backfill with native soil unless it is clay from basement excavation or other undesirable fill material. In that case, mix in soil amendments according to instructions from a local nursery, or bring in as much good topsoil as possible. Tamp gently and add water to fill large air spaces and to give your tree its first good drink in its new home. As the tree grows, be sure to water the surrounding soil area to encourage root spread.

What About the Wrapping Material?

Research has not yet provided a definite answer about the potential harm of leaving wire baskets in place after planting. However, the most prudent action is to cut and remove the top two tiers of wire after the ball is set in the hole. Problems more serious than wire baskets are treated burlap (feels like plastic) and nylon rope. Both should be completely removed. Other kinds of burlap and twine, even if biodegradable, should be cut away from the upper 1/3 of the ball. Never let the remaining pieces protrude above the soil or they can act as wicks, drying the soil. Trees in pots or cans should be gently removed before planting. Cut away the plastic or metal if the root ball does not slide out easily. Paper or plastic trunk wrappers should also be removed. This material was put on the tree to protect it during shipment and will generally do more harm than good if allowed to remain on the tree.

Following Up After Planting



Leave as much leaf as possible to help the tree build food reserves. Properly prune out dead or broken limbs, or those that rub. Do corrective pruning for shape the second year.

Watering

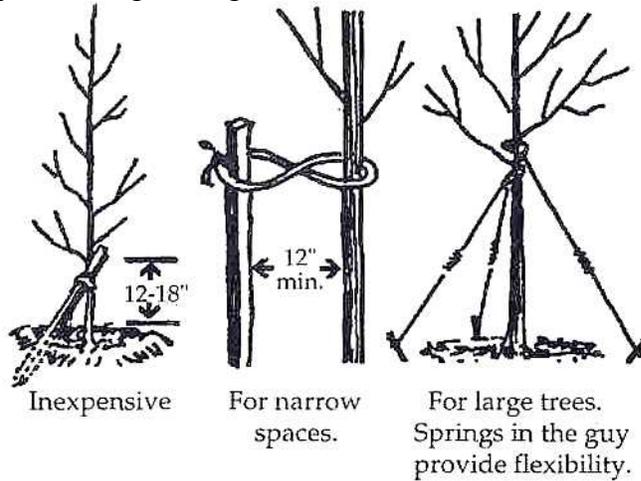
Watering is the key to tree survival. It should be used when filling the planting hole to eliminate large air cavities, firm the soil around fine roots and make nourishment available to the new tree. During planting, bare root trees can be dipped in water absorbing polymers. This amazing chemical comes under a variety of brand names and is available from nurseries. Its function is to attract water when abundant and hold it longer than soil when condition get dry. It can also be used with balled and burlapped trees, being mixed with the backfill. The effects last for about two years. With or without the aid of polymers, water deeply around your tree once a week during warm dry spells.

Fertilizing

Avoid fertilizing shade trees until late spring of the second year following planting. fertilizers can “burn” roots or stimulate crown growth faster than the roots can supply water.

Staking

Stakes and guy wires should be used only if support is necessary. Stakes sometimes create tripping hazards and can weaken a young tree. However, when using, avoid common problems by following these guidelines:



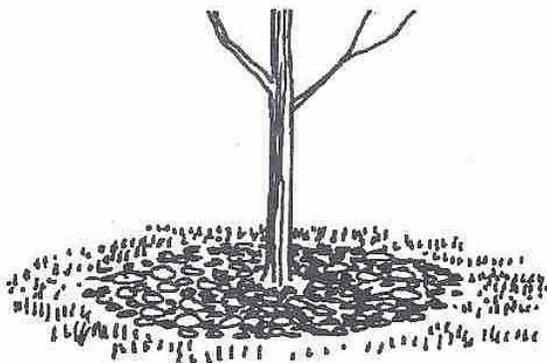
- If the main stem droops, find the best place for support ties by moving your hands up the trunk to locate the point above which the top can stand up on its own. Place the support ties about 6" above the point.
- Ties can be made many ways, but a loosely-fitted figure 8 tie made of polyethylene, cloth or webbed strap is easy to install, provides good support and cushions the tree from rubbing against the stake. Using two ties will also minimize the chance of bark damage from rubbing.

Stakes vary with space available and personal preference, but should be used only when absolutely necessary.

- Regardless of the tie used, allow slack for the top to sway.
- Avoid driving stakes through the rootball, or using stakes with flanges that will break roots when removed.
- Remove support ties after one or two years.

Pruning

Unless directions specify otherwise, it is better not to prune after the planting if the tree will be watered regularly. Leaves manufacture the food needed for root growth, so the young tree needs as much of its crown as possible. Exceptions to this rule include trees that will be exposed to strong winds or drought conditions, in which cases early pruning will reduce the demand for water from the roots. Always prune dead or broken branches.



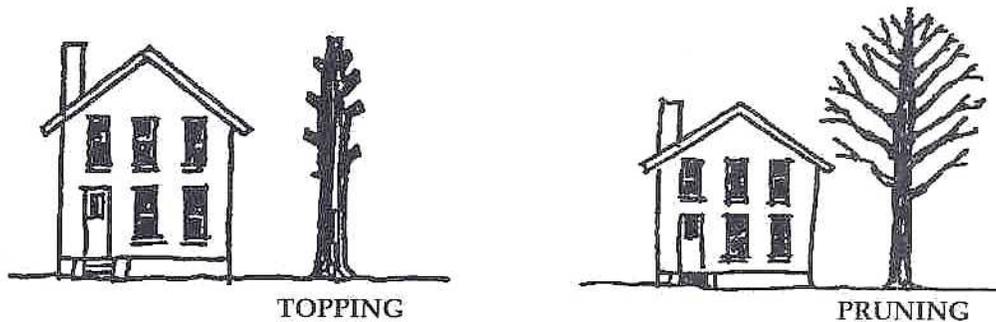
Mulch is any material placed on soil to protect it and that does not cause the plant problems. Common mulches include bark, wood chips, decorative gravel and crushed lava.

Mulch

Mulch is a young tree's best friend. It holds down competing weeds or grass, retains soil moisture, prevents soil cracking that can damage new roots, protects the trunk from lawnmower damage, and helps prevent soil compaction. Organic mulches such as wood chips or pine needles also contribute to better soil structure and aeration as they decompose. Avoid limestone rock and allow no mulch to touch the tree's trunk or be piled higher than 3 inches.

What is Topping?

Topping is the excessive trimming and/or elimination of the tree crown, limbs and branches which gives the tree an abnormal vertical orientation.



What is Pruning?

Pruning is the acceptable process of removing branches and limbs in such a manner as to reduce potential hazards from overgrowth, and produce a desirable form, minimizing the negative effects which occur from excessive removal, or “topping.”

Why NOT to “Top”

Starvation: Good pruning practices rarely remove more than 1/4 to 1/3 of the crown, which in turn does not seriously interfere with the ability of a tree’s leafy crown to manufacture food. Topping removes so much of the crown that it upsets an older tree’s well developed crown to root ratio and temporarily cuts off its food making ability.

Shock: A tree’s crown is like an umbrella that shields much of the tree from the direct rays of the sun. By suddenly removing this protection, the remaining bark tissue is so exposed that scalding may result. There may also be a dramatic effect on neighboring trees and shrubs. If these thrive in shade and the shade is removed, poor health or death may result.

Insects and Disease: The large stubs of a topped tree have a difficult time forming callus. The terminal location of these cuts, as well as their large diameter, prevent the tree’s chemically based natural defense system from doing its job. The stubs are highly vulnerable to insect invasion and the spores of decay fungi. If decay is already present in the limb, opening the limb will speed the spread of disease.

Weak Limbs: At best, the wood of a new limb that sprouts after a larger limb is truncated is more weakly attached than a limb that develops more normally. If rot exists or develops at the severed end of the limb, the weight of the sprout makes a bad situation even worse.

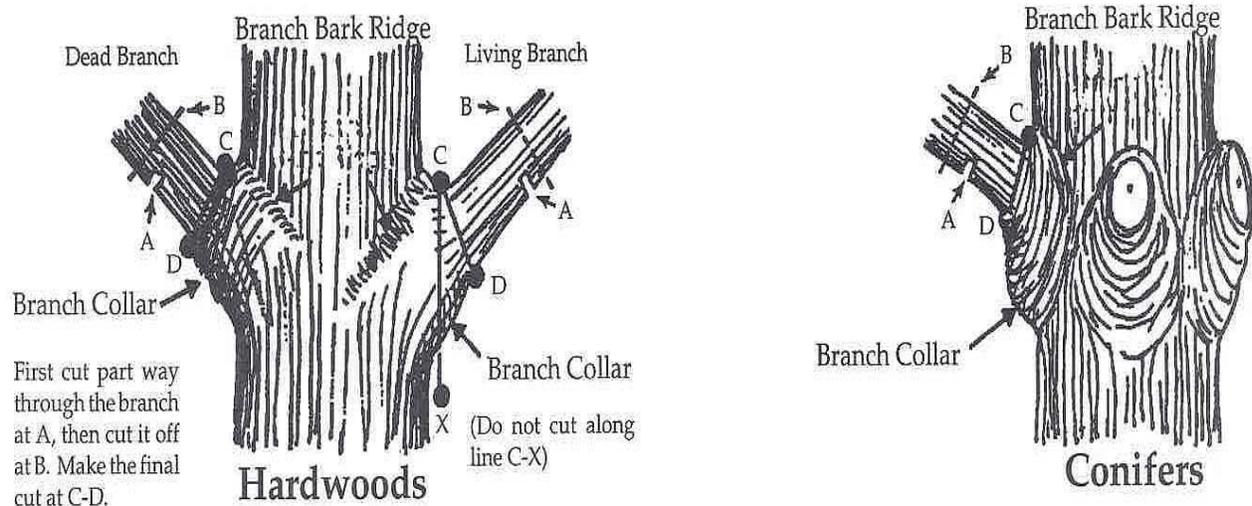
Rapid New Growth: The goal of topping is usually to control the height and spread of a tree. Actually, it has just the opposite effect. The resulting sprouts (often called water sprouts) are far

more numerous than normal new growth and they elongate so rapidly that the tree returns to its original height in a very short time with a far denser crown.

Tree Death: Some older trees are more intolerant to topping than others. Beeches, for example, do not sprout readily after severe pruning and the reduced foliage most surely will lead to death of the tree.

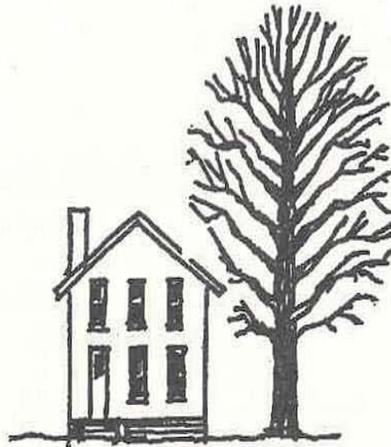
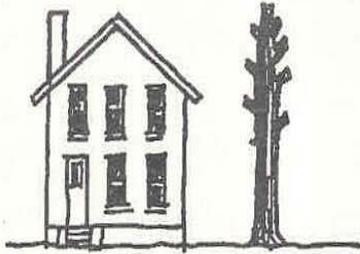
Ugliness: A topped tree is a disfigured tree. Even with its regrowth it never regains the grace and character of its species. The landscape and the community are robbed of a valuable asset.

Proper Pruning Principles



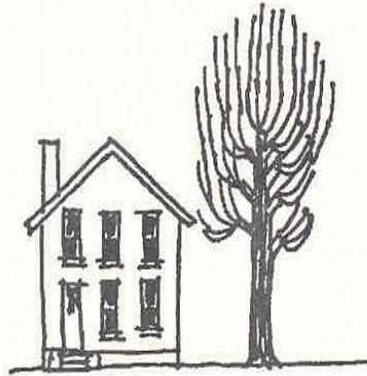
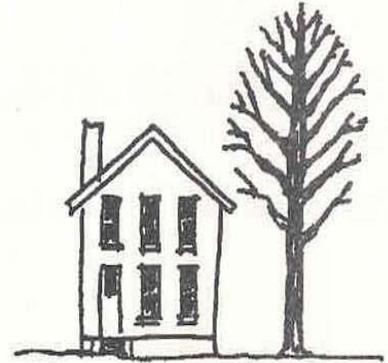
Thanks largely to the work of Dr. Alex L. Shigo and other scientists at the USDA Forest Service's Northeastern Forest Experiment Station in Durham, NH, much is now understood about a tree's natural system of defense against infections from wounds. Based on this knowledge, these methods of making pruning cuts are recommended to help work with rather than against a tree's natural tendency to wall off injured tissues and prevent the spread of decay. In these illustrations, final cuts should be made from points C to D. Do not cut along line C-X, which is simply an imaginary vertical line to help you locate C-D.

TOPPING



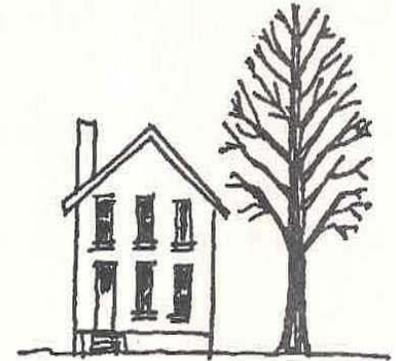
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PRUNING



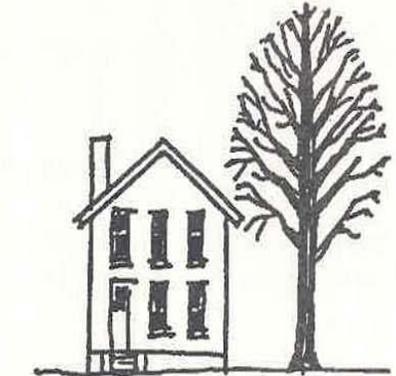
Year 3

Vigorous sprouts have sprung out of the topped tree in large numbers and are growing with abnormal rapidity. The pruned tree adds growth more slowly and more normally distributed.



Year 6

In a relatively short time, the topped tree is as tall - and far bushier and more dangerous - than it was to begin with. The properly pruned tree is safer, more beautiful, and its size better controlled.



Source of Information

Appendix D, Tree Care and Maintenance was adopted from Tree City USA Bulletin 8 (“Don’t Top Trees!”) and 19 (“How to Select and Plant a Tree”) and was published by:

The National Arbor Day Foundation, 100 Arbor Avenue, Nebraska City, NE 68410.