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TREES



**SELECTION
PLANTING
AND CARE**



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SELECTION

Successful tree planting begins with the selection of an appropriate tree for each specific site. Follow these principles for tree selection.

DIVERSITY

The urban forest must consist of a variety of plant species. Single species plantings have led to a devastation of the urban forest by introduced pests such as Dutch Elm Disease.

On any given street or in any given park area, plantings should not be greater than 20% of a single species, 30% from a single genus or 40% from a single family. For aesthetics, species can be grouped in 3's or 5's, with different species interspersed between groups. Under no circumstances should a street or lane be lined with a single species on both sides.

CLIMATIC ADAPTATION

Select trees that are hardy for Delaware's climate. For appropriate suggestions, refer to the "Delaware Urban & Community Forestry Advisory Council Recommended Plant List" or the Delaware Cooperative Extension publication "Recommended Trees and Shrubs for Delaware."

PROPER ENVIRONMENT

Trees should be selected based on their ability to withstand the environmental conditions of the planting site. This includes characteristics such as shade tolerance, sun tolerance, drought tolerance, moisture tolerance, salt tolerance, wind tolerance, pollution

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tolerance, etc. Limiting conditions, such as overhead power lines, must be considered when making selections.

First complete a thorough evaluation of the site and then make selections. Trees must have sufficient drainage. To check drainage, fill the hole with water and measure the reduction in water. Holes that drain less than one inch per hour are not suitable for tree planting.

APPROPRIATE SPACING

Leave the following distances between trees to allow each tree to develop:

- Large trees (60-100 feet tall).....50-75 feet
- Medium trees (40-50 feet tall).....40-50 feet
- Small trees (less than 30 feet tall).....20-40 feet


The best times to plant trees are from October 15 through November 30 and April 1 through May 15.

APPROPRIATE SIZE

Plant 1½- to 2-inch caliper (trunk diameter) trees that will become established quickly. Larger trees take longer to recover from transplant shock and may not grow for several years.

RESTRICTIONS

Before digging, call “Miss Utility” (1-800-282-8555) to locate underground utilities. Check with your city or town to see if a permit is required before planting.

PLANTING

The best times to plant trees are from October 15 through November 30 and April 1 through May 15. If you plant in the Fall, the tree becomes settled and can begin growing early in the spring. If you plant in late

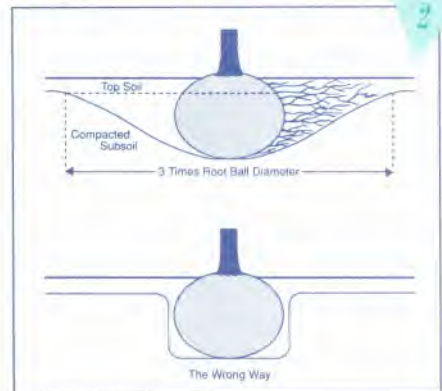
ILLUS. 1



spring or early summer, the tree may have trouble becoming established because of the extra stress of supporting new leaves with high water and nutrient demands. However, species that produce little root growth in the fall should be planted in the spring (for example: magnolia, tulip poplar, most evergreens, willow oak, scarlet oak, black oak, and dogwood).

The following is a list of step-by-step instructions for correct tree planting (see illus. 1).

ILLUS. 2



1. If possible, till an area 5 times the diameter of the root ball. If that is not possible—for example, in a lawn—aerate the surrounding soil with a core aerator or by hand with a spading fork. Be sure to bring soil to the surface as opposed to simply punching a hole.

2. Dig a rough-sided, saucer-shaped planting hole that is 2-3 times wider than the root ball and deep enough to plant

the tree at the same depth or slightly higher than it was growing in the nursery (see illus. 2). If the site is poorly drained, the root ball should be 2-4 inches above the surrounding soil. The sides of the hole should slope gradually up to the surrounding grade.

3. Gently place the balled-and-burlapped tree into the hole to avoid breaking the root ball. Always handle balled-and-burlapped trees by the root ball and not the tree trunk.

Container plants are often pot-bound. Slash the root system and pull it apart at the bottom to break up circling roots. Place the tree in the hole and spread chunks of the root system over a cone of soil.

4. Cut and remove all twine from the tree trunk. Once the ball is in the hole, gently slide out the burlap or cut as much away as possible. Treated or synthetic burlap and tree bags must be removed completely.

5. Back-fill with soil that you removed from the hole. If the soil is too poor or full of debris, use soil that is as similar to the surrounding soil as possible. Do not add anything such as peat moss to the soil. Since it is impossible to change all the soil the tree must eventually live in, it is best for the tree to begin to grow in soil similar to the surrounding soil. Back-fill two-thirds of the hole and tamp the soil to eliminate air pockets.

6. Water and continue to back-fill the hole.

7. Mulch with a 2- to 3-inch layer of hardwood bark mulch. Be sure the mulch is pulled away from the base of the tree.

A DO NOT LIST

- Do not build a saucer around the base of the tree with soil or mulch.
- Do not use tree wrap; it can harbor harmful insects.
- Do not stake trees unless they are large, top heavy or planted in an area with unidirectional winds.



It is best to avoid staking. Evaluate the tree after 2 weeks. If it is leaning, it should then be staked. To stake a tree, use three stakes hammered into the ground beyond the root ball. Secure with flexible strapping and allow 1 inch of play in the straps to help the tree develop a strong trunk and root system. Remove the stakes and strapping after 4 to 6 months.

- Do not prune trees at planting except to remove dead or damaged branches.

The leaves are needed to produce food for the roots. Also, pruning often causes a flush of tender growth that requires extra water. Instead, supply water to compensate for roots lost during transplanting.

- Do not fertilize trees at planting or during the first year after planting. During the second year, a slow-release fertilizer may be used.

Young roots can be burned easily by fertilizer.

CARE & MAINTENANCE

WATERING

The best thing you can do to ensure the establishment and growth of your new tree is water correctly during the first year.

The best thing you can do to ensure the establishment and growth of your new tree is water correctly during the first year. New trees should be watered at least once a week to a depth of one foot. Water must soak deep into the ground and not just wet the top 2 or 3 inches. Water more frequently during dry weather.

- When using a hose, allow the water to trickle out onto the base of the tree for at least one hour; move the hose around every 15 minutes.

- If you are watering by hand, slowly apply at least 5 gallons of water to the base of the tree. Pour the water over a board to disperse it throughout the area.

MULCHING

Mulching helps reduce weeds, moderates soil temperatures, and conserves soil moisture. Mulches can be either composted sewage sludge, wood chips, bark nuggets, pine needles, or shredded bark.

- Apply 2-3 inches of mulch around the base of the tree.
- Avoid buildup of mulch year after year. Rake the mulch once a year to prevent a hard crust from forming.
- Keep weeds, grass, and other vegetation from growing around the base of the tree.

Nitrogen is the most important element for tree growth.

FERTILIZING

Nitrogen, phosphorus, and potassium are the primary elements necessary for tree growth. Take a soil test to tell you the pH of the soil and how much phosphorus (P) and potassium (K) are already present. The results from the soil test will recommend any pH adjustment necessary and the correct amount of phosphorus and potassium to apply.

A bag of fertilizer will always list three numbers; for example, 10-8-6. The first number indicates the percentage of nitrogen; the second, the percentage of phosphorus; and the third, the percentage of potassium. Nitrogen is the most important element for tree growth.

To promote rapid growth so that young trees quickly become large and functional, spread 2 cups of 10-8-6



fertilizer around the base of the tree during the second year after planting. Spread 4 cups of 10-8-6 during the third year after planting.

Less fertilizer per area of root system is needed to maintain the health of a mature tree. But a larger tree has a larger root system. If the tree is confined in a small planting area, spread 3 to 4 cups of 10-8-6 over the exposed surface of the root system. If the tree is in a grass strip, lawn, or park setting, map the area of the root system and spread the full 20 pounds of 10-8-6 per 1000 square feet of ground surface over the entire root system. If the tree is planted in a lawn that is fertilized regularly, it does not need extra fertilizer. For more information about fertilizing large trees, write to the Cooperative Extension office and request Soil Test Note 13: Fertilizing Ornamental Plantings.

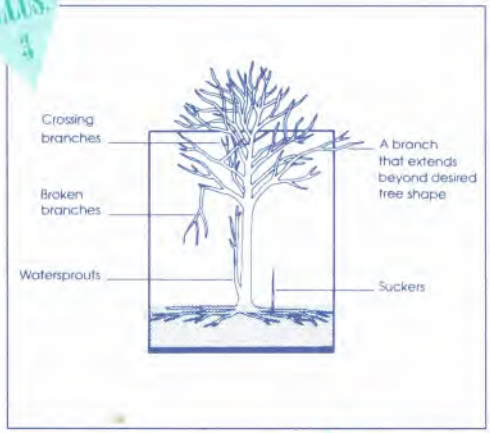
- Do not fertilize trees the first year after planting.
- Add lime, sulfur, phosphorus, and/or potassium as recommended by the soil test.
- To promote rapid growth, apply nitrogen (10-8-6) beginning the second year after planting.
- To maintain the health of a mature tree, apply nitrogen (10-8-6) every other year.
- Fertilize from late fall to early spring.

Trees are pruned to maintain health, vigor, and an attractive shape.

PRUNING

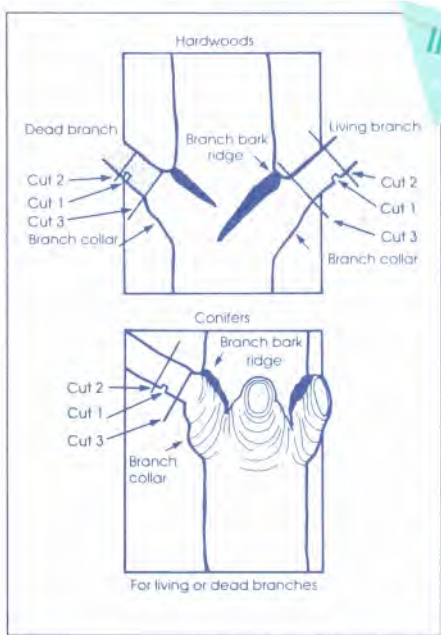
Trees are pruned to maintain health, vigor, and an attractive shape (see illus. 3). Prune trees while they are dormant—from November to early March. But avoid pruning trees that bleed excessively, such as maples in the spring. Remove dead or diseased wood anytime.

ILLUS. 3



Pruning shears, loppers, a good wood saw (preferably a tree saw), and a pole pruner are necessary for the correct and safe removal of tree limbs. Use only sharp tools. Limbs not much thicker than a pencil can be pruned easily with a pair of hand shears. Limbs up to 3/4 inch thick can be cut with a pair

ILLUS. 4



of tree loppers. Branches thicker than 3/4 inch should be cut with a pruning saw. For out-of-reach limbs, a pole saw may be necessary. Be careful when using a pole saw, especially when working around overhead utility wires. Pole pruners will conduct electricity if they come in contact with energized wires.

All pruning cuts should be made at the branch collar (see illus. 4). There is no need to apply wound dressing or tree paint to the cut surface. However, make sure no ragged edges of bark or stubble of twigs remain attached to the tree.

- Remove diseased and dead wood.
- Remove interfering branches that rub together.
- Narrow-angle or V-shaped crotches are weak and should be removed before they become heavy enough to split the trunk below the crotch.
- Suckers and water sprouts (see illus. 3) disrupt the natural shape of the tree and should be removed.

PROBLEMS

H *Healthy, vigorous trees often have the natural resources necessary to combat insect and disease problems.*

Real causes of tree problems are usually not insects and disease-causing microorganisms. These are secondary agents that attack weakened, wounded, improperly treated, neglected, and generally unhealthy trees.

Healthy, vigorous trees often have the natural resources necessary to combat insect and disease problems. In order to maintain healthy trees in an urban environment, it is necessary to identify and solve some of the common problems.

COMPACTION

In compacted ground, there is no room for oxygen, which is needed for tree growth.

- Eliminate or avoid traffic over the root system of trees.

EXCESS MULCH

A two-inch layer of mulch is sufficient. When mulch is piled upon mulch each year, roots grow in the mulch layer. Those roots are susceptible to drought stress and winter injury. Mulch can also become crusted, causing water to run off.



- Apply mulch only as the old mulch decomposes. Rake the mulch periodically to break up the crust that forms, and then incorporate it into the soil.

DOG URINE

The acidic urine causes root injury and reduces nutrient uptake.

- Discourage pet owners from allowing their dogs to use trees as bathrooms.

TRUNK, BARK, BRANCH, OR ROOT DAMAGE

Any damage to the physical integrity of the tree provides an entry for insects and disease organisms.

- Keep lawn mowers and weed eaters away from the base of trees. Do not fasten bicycle chains around tree trunks. Never put nails into the tree trunk.

HERBICIDES

Some herbicides that are useful for killing lawn weeds may be taken up by tree roots and cause damage.

- Do not use Dicamba on the lawn near desirable trees.

SALT DAMAGE

Salt used on roads and sidewalks will cause root damage.

- De-ice sidewalks with sand, ash, or calcium chloride instead of rock salt.

SUPPORTS, WIRE, TWINE, AND TREE WRAP

Supports, wire, and twine left on the tree will girdle the tree trunk as it grows, cutting off the flow of water and

TREE FLARE

Look to see whether the tree enters the ground with a natural flare or whether it enters straight like a utility pole. The lack of a flare could be caused by a girdling root or recent soil fill around the base of the tree.

CROWN DIEBACK

Dead twigs or branches beginning to show up in the tree crown are signs of old age, insect infestation, disease, or root injury.

ABNORMAL LEAF SIZE

Leaves that are smaller than normal for the species are often a sign of root injury.

TRUNK SCARS

Look for scars that are not healed on the trunk. Damaged tissue should be removed to speed the healing process.

DISRUPTION OF ROOT SYSTEM

Be aware of construction such as paving over the tree root system or installation of underground utility lines. The resulting root damage may show up in the tree crown two to five years later.

YELLOW FOLIAGE

When foliage is not a normal green, there may be a pH imbalance.

STICKY SUBSTANCE DRIPPING FROM THE TREE

This is not “summer sap.” It is usually the waste product of insects such as aphids, lacebugs, or scale.

Vou can help keep Delaware beautiful by planting and maintaining a tree.

INSECTS

Look for the presence of large populations of insects that may or may not damage the tree.

You can help keep Delaware beautiful by planting and maintaining a tree. Be sure to choose the proper site, select an appropriate tree, plant the tree properly, maintain it as needed, and keep on the lookout for potential problems.

