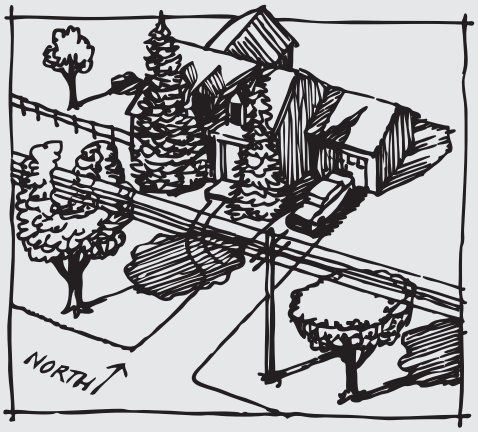
The Right Tree for the Right Place

from the **TREE CITY USA® BULLETIN**

Any Friend of Tree City USA can list the many benefits of trees — shade, beauty, windbreak, privacy, cleaner air, less noise, less glare, and higher property values to name a few. But the key to these benefits is to select the right tree and plant it in the right place. The right tree in the right place not only ensures a lifetime of satisfaction, it also keeps maintenance costs low.



WRONG (above)

Planting large trees under utility lines often means disfigured trees. Large evergreens close to the house on the south block warming winter sunlight.

RIGHT (right)

Short flowering trees don't clash with overhead utility lines. Large deciduous trees on the southeast, southwest, and west provide cooling shade in summer and don't obstruct the low winter sun. An evergreen windbreak on the north blocks cold winter winds.

THIS ISSUE:

- How environmental factors should influence your choice of trees
- Match your purpose for planting with the right tree to plant
- Information about using planter boxes
- Much more

BEFORE PLANTING, know what the tree will look like as it nears maturity.

Shrubs

Dogwood, Flowering Plums, Hawthorn, Sumac, Hornbeam, Redbud

Sassafras, Post Oak, Quaking Aspen, Eastern Redcedar, Flowering Pear

Pin Oak, Arborvitae, Hemlock, Blue Spruce

White Oak, Linden, Red Oak, Tuliptree, Walnut, Many Pines

Ponderosa Pine, Redwood, Planetree

**Individual specimens may grow larger in natural settings.*

FACTORS TO CONSIDER

1. **The trees's purpose** will impact the suitability of different tree species, whether used for shade, aesthetic beauty, wind protection, screening, or other purposes.
2. **Size and location** of the tree, including available space for roots and branches, affects the decision on which species to plant. (See chart)
3. **Crown form or shape** varies among species, including round, oval, columnar, V-shaped, or pyramidal shapes. Consider how the shape of the tree works in the space available.

Arbor Day Foundation®
100 Arbor Avenue • Nebraska City, NE 68410

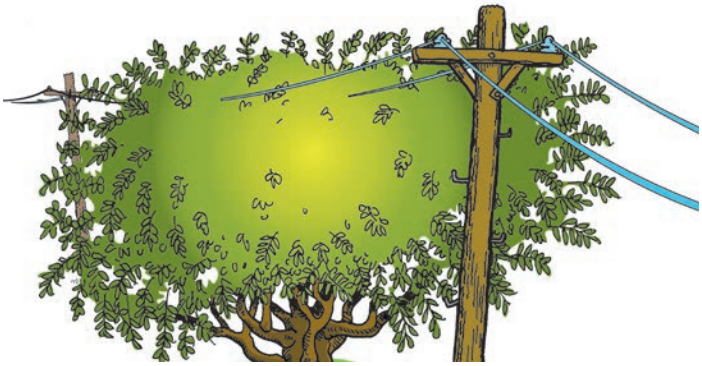
Tree Selection and Placement

Understand the various factors to consider when selecting trees.

Tree selection and placement are important decisions a homeowner makes when landscaping or replacing a tree. Matching the tree to the site benefits both the tree and the homeowner.

Before asking, "What kind of tree should I plant?" consider the following:

- Why is it being planted and what function will it serve?
- What are the soil conditions?
- How will necessary maintenance be provided?
- What size tree is best suited for the location? How large will the tree be when full grown? Do overhead or below ground utilities prevent planting a tree? What clearance is needed for sidewalks, patios, or driveways?



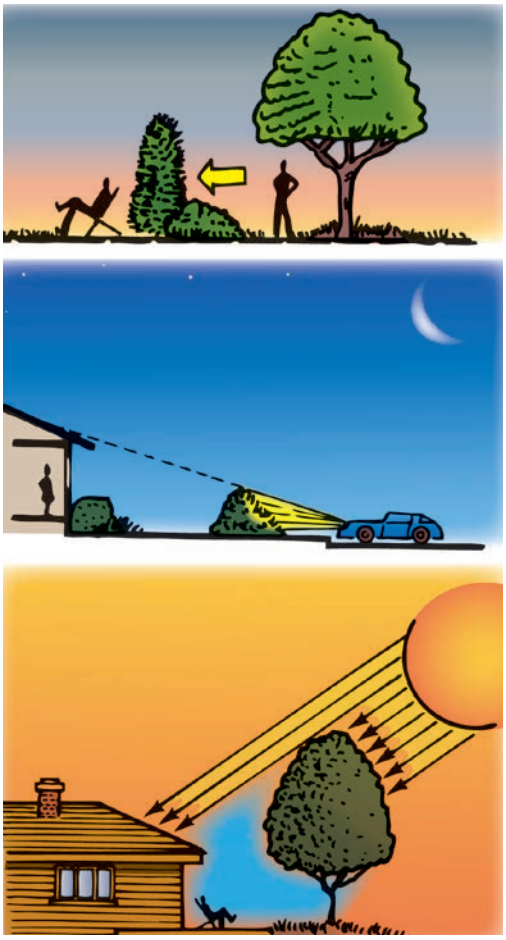
Form and Size

Selecting the right form (shape) to complement the desired function can reduce maintenance costs and increase the tree's value.

- Mature tree size determines the level of benefits received.
- Larger trees typically provide the greatest economic and environmental returns.
- Depending on the site restrictions, you can choose from hundreds of form and size combinations.
- Low spreading trees may be planted under overhead utility lines, while a tall evergreen may provide a screen.

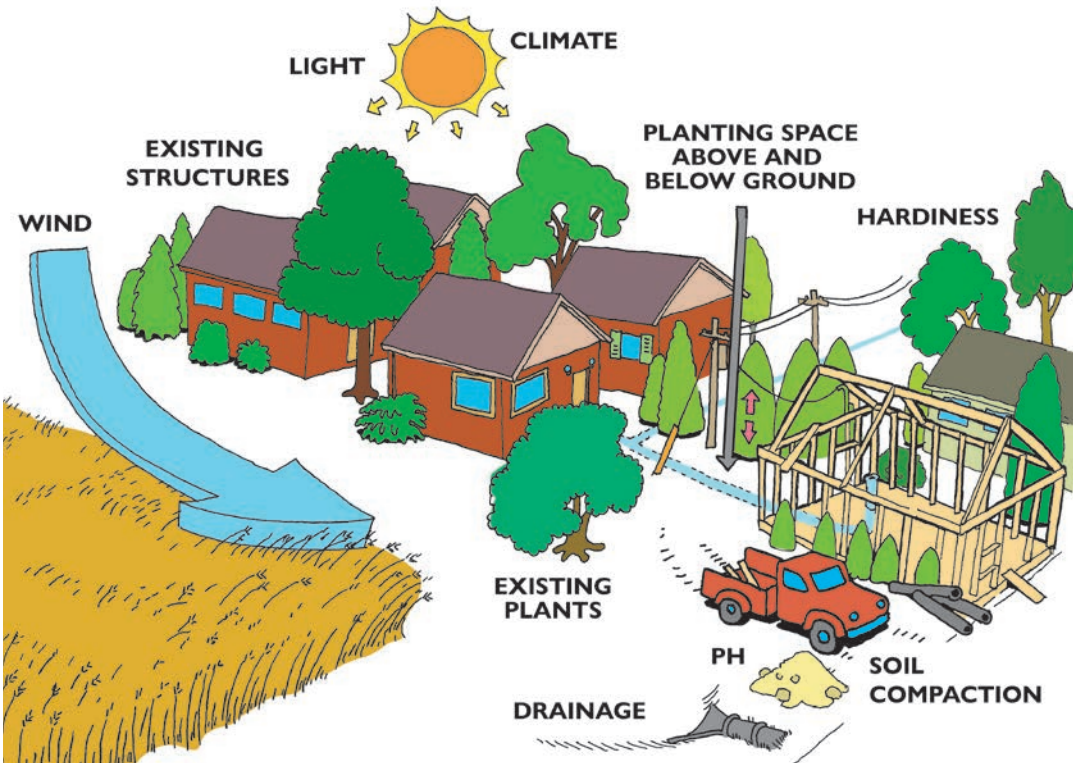
Tree Functions

- Healthy trees increase property values.
- Deciduous shade trees cool homes in the summer and allow the winter sun to heat homes when they lose their leaves.
- Evergreens can provide a windbreak or a screen for privacy.
- Fruit trees or shrubs can provide food for owners or wildlife.
- Street trees reduce the glare from pavement, reduce runoff, filter pollutants, add oxygen, and improve overall appearance and quality of life.
- Trees also provide environmental benefits such reducing the amount of carbon dioxide in the atmosphere.



Site Conditions

Choosing a tree for the right site conditions is the key to tree survival and reduced maintenance. Consider the following:



Soil conditions

- The soil in dense urban areas and new subdivisions is often disturbed, shallow, compacted, and subject to drought. An arborist can take soil samples from your yard for testing to determine which trees are suited for your property and may provide recommendations to improve the soil condition.

Exposure (sun and wind)

- The amount of available sunlight will affect tree and shrub selection. Wind exposure is also a consideration.

Space constraints

- Available planting space can be limited by many factors, such as overhead or underground utilities, pavement, buildings, visibility, or other trees. Ensure there's adequate room to let trees grow above and below ground.

Hardiness zone

- Hardiness is the tree's ability to survive extreme temperatures of a specific region. Research plants for their hardiness information in your region.

Human activity

- The top five causes of tree death result from things people do. Soil compaction, under-watering, overwatering, vandalism, and the number-one cause — planting the wrong tree — account for more tree deaths than all insect- and disease-related tree deaths combined.

Drainage

- Roots require oxygen to develop; poor drainage limits oxygen availability and may kill the tree.

Insect and disease susceptibility

- Every plant has its particular pest and disease problems and the severity varies geographically.

Personal preferences and site constraints also play major roles in the selection process.

What Is a Certified Arborist?

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Finding an Arborist

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Through research, technology, and education, the International Society of Arboriculture promotes the professional practice of arboriculture and fosters a greater worldwide awareness of the benefits of trees.

New Tree Planting

Information on proper practices for planting a tree with a nine-step approach to successful planting and establishment.

Purchasing a tree is an investment, and how well that investment grows depends on the type of tree selected, the location, and the care provided.

When to Plant

- Ideally during the dormant season—in the fall after leaf drop or in early spring before bud break.
- Weather conditions are cool and allow plants to establish roots in the new location before spring rains and summer heat stimulate new top growth.
- Healthy balled and burlapped or container trees can be planted throughout the growing season.
- In tropical and subtropical climates where trees grow year round, any time is a good time to plant a tree, provided that sufficient water is available.

Planting Stress

Balled-and-burlapped trees lose a significant portion of their root system when dug at the nursery. As a result, trees commonly exhibit what is known as "transplant shock." Transplant shock is a state of slowed growth and reduced vitality following transplanting.

Container trees may also experience transplant shock, particularly if they have circling (girdling) or kinked roots that must be cut. Proper site preparation, careful handling to prevent further root damage, and good follow-up care reduces transplant shock and promotes faster recovery.

Steps to Plant a Tree

Note: *Before you begin planting your tree, be sure you have located all underground utilities prior to digging.* ***811 is the national call-before-you-dig phone number.*** *Anyone who plans to dig should call 811 or go to their state 811 center's website.*

Carefully follow these nine steps to help your tree establish quickly in its new location:

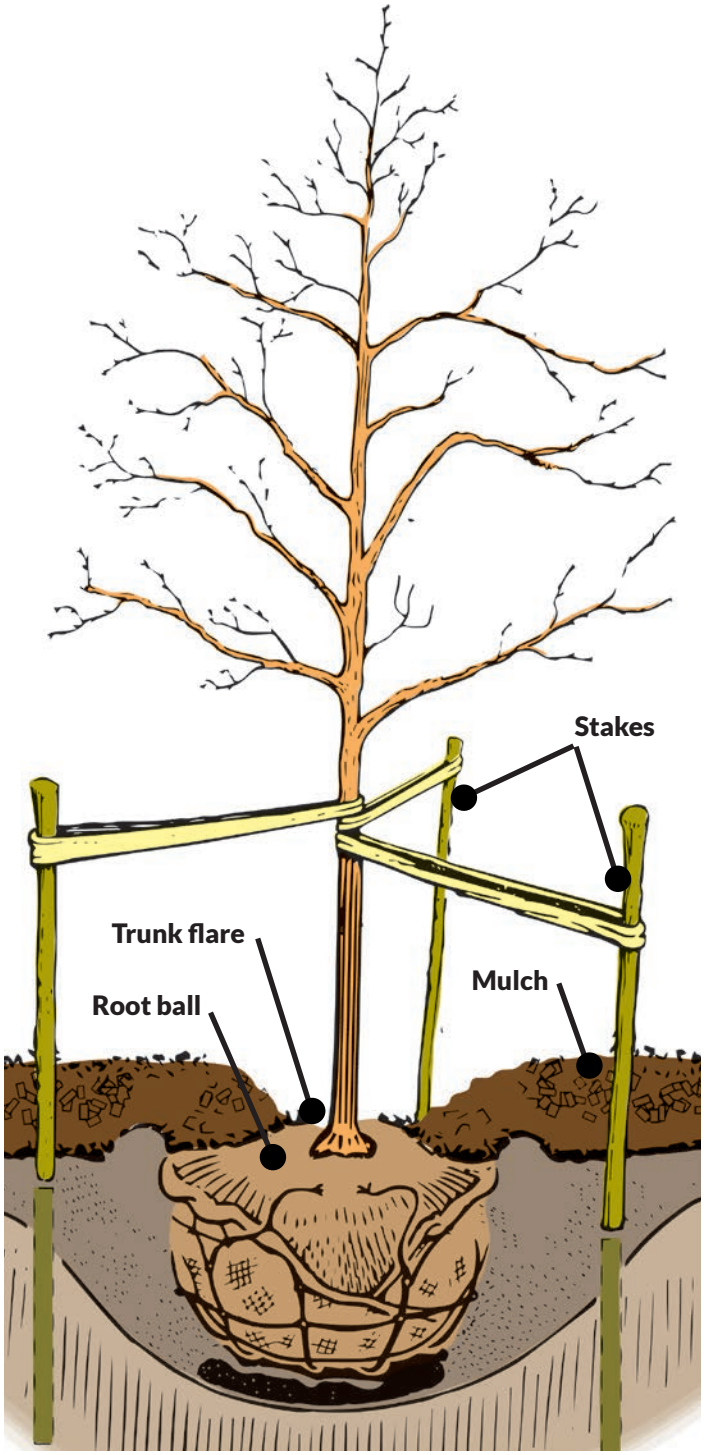
1. The trunk flare is where the trunk expands at the base of the tree. **Ensure trunk flare is partially visible after the tree is planted.** Remove excess soil prior to planting if flare is not visible.
2. Dig a shallow, broad planting hole. **Holes should be 2–3 times wider than the root ball**, but only as deep as the root ball.
3. If wrapped, remove any cover from around the root ball and trunk to facilitate root growth. Remove wire basket or cut one or two rings off so it is low-profile and will not interfere with future root growth. Inspect tree root ball for circling roots and straighten, cut, or remove them. Expose the trunk flare if necessary.
4. Place the tree at the proper height. When placing the tree in the hole, lift by the root ball, not the trunk. The majority of tree's roots develop in the top 12 inches (30 cm) of soil. Planting too deep can be harmful to the tree.
5. Straighten the tree in the hole. Before filling the hole, have someone examine the tree from several angles to confirm it is straight.
6. Fill the hole gently but firmly. Pack soil around the base of the root ball to stabilize it. Fill the hole firmly to eliminate air pockets. Further reduce air pockets by watering periodically while backfilling. Avoid fertilizing at the time of planting.
7. If staking is necessary, three stakes or underground systems provide optimum support. **Studies have shown that trees develop stronger trunks and roots if they are not staked**; however, it may be required when planting bare root stock or on windy sites. Remove stakes after first year of growth.

8. Mulch the base of the tree. Place a 2–3 inch (5–7.5 cm) layer of mulch, but be sure not to pile much right against the trunk. **A mulch-free area of 1–2 inches (2.5–5 cm) wide at the base of the tree will reduce moist bark and prevent decay.**

9. Provide follow-up care. Keep the soil moist by watering at least once a week, barring rain, and more frequently during hot, windy weather. Continue until mid-fall, tapering off as lower temperatures require less-frequent watering.

Other follow-up care to consider:

- Minor pruning of branches damaged during the planting process may be required.
- Prune sparingly after planting. Delay corrective pruning until a full season of growth.
- If trunk wrapping is necessary, use biodegradable materials and wrap from the bottom.



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Be an Informed Consumer

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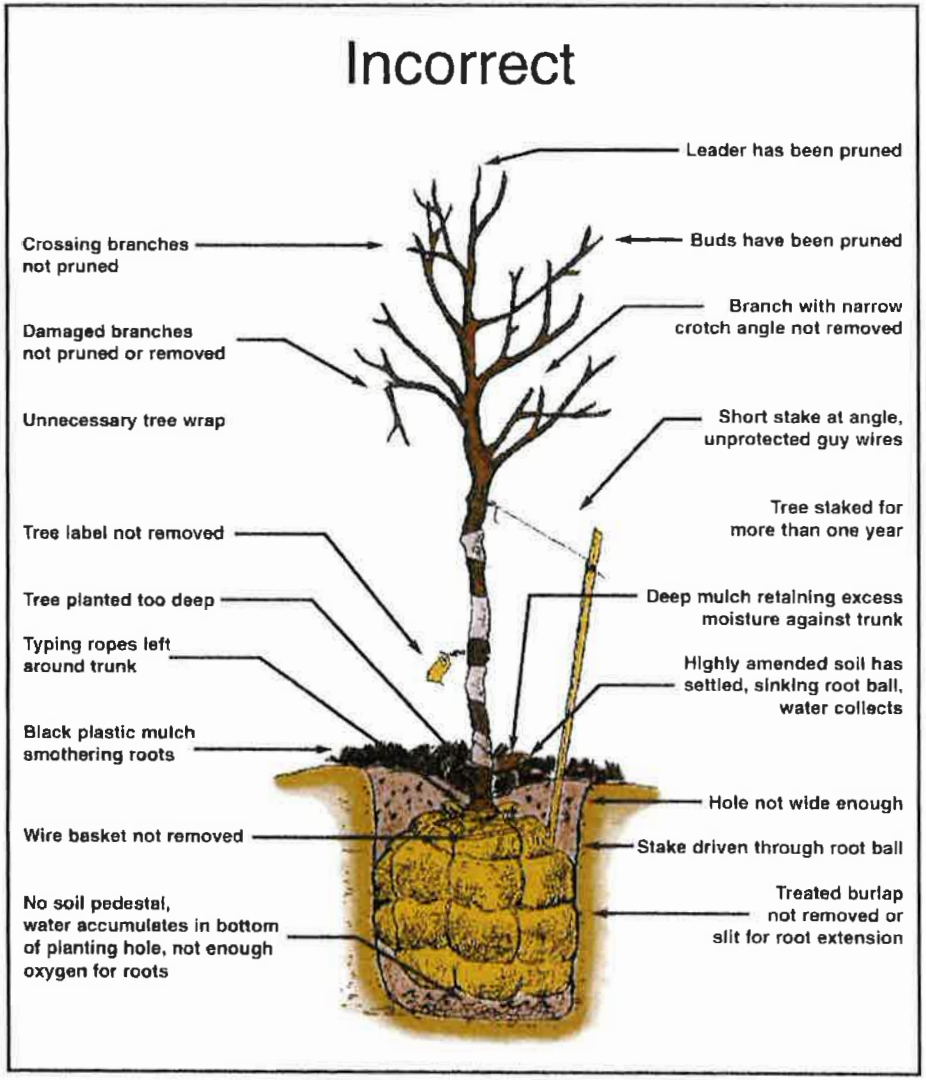
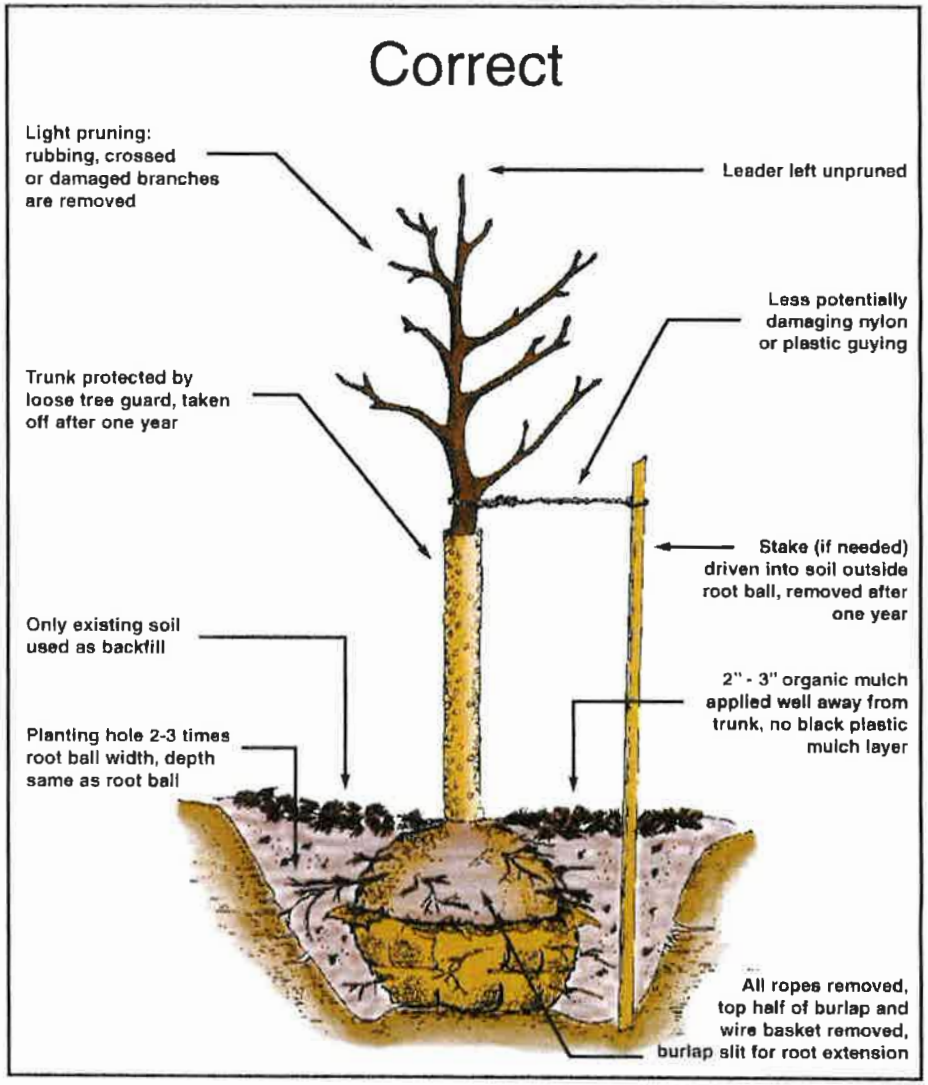
Tree Planting

To ensure healthy trees, start with Right Tree/Right Location.
Once you select a tree suited for your site and its microclimate, be sure to plant the tree correctly!

Incorrect



Correct



Poster Design by:
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Illustrations/Layout: S.K. Kane

Funds provided by the Urban and Community Forestry Assistance Grants Program of the U.S. Forest Service in cooperation with the Virginia Department of Forestry.

5 steps to plant a tree

TREE CANOPY COLLABORATIVE

Extension
UNIVERSITY OF WISCONSIN-MADISON
DANE COUNTY

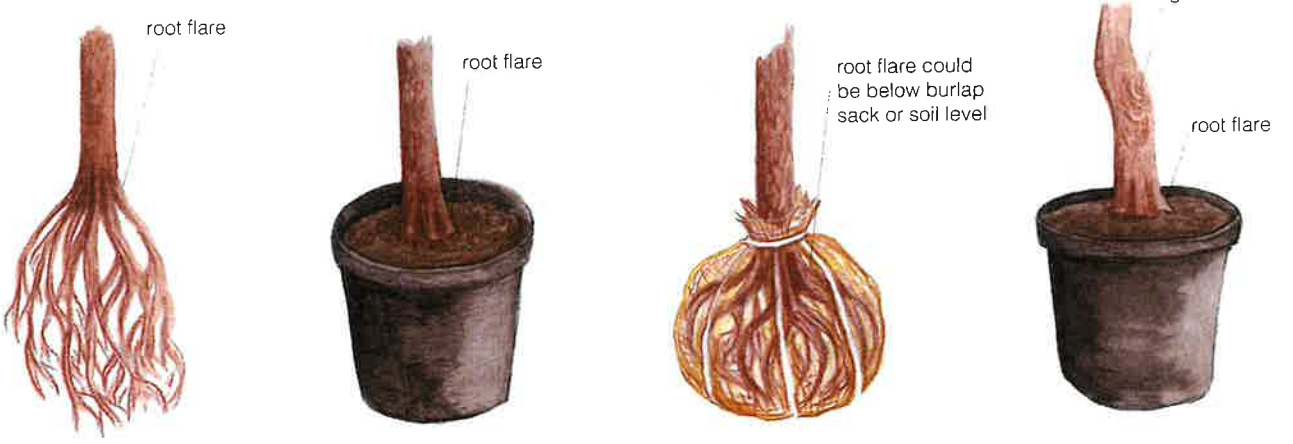
DANECLIMATEACTION.ORG/INITIATIVES/TREE-CANOPY

1 Call Digger's Hotline

Call 811 or visit diggershotline.com to mark under-ground utilities. Check for overhead lines. Make sure to site your tree in a spot that matches its needs.

2 Find the root flare

The root flare is the bulge between the stem and the roots. Be careful not to confuse a graft with a root flare.



bare root tree

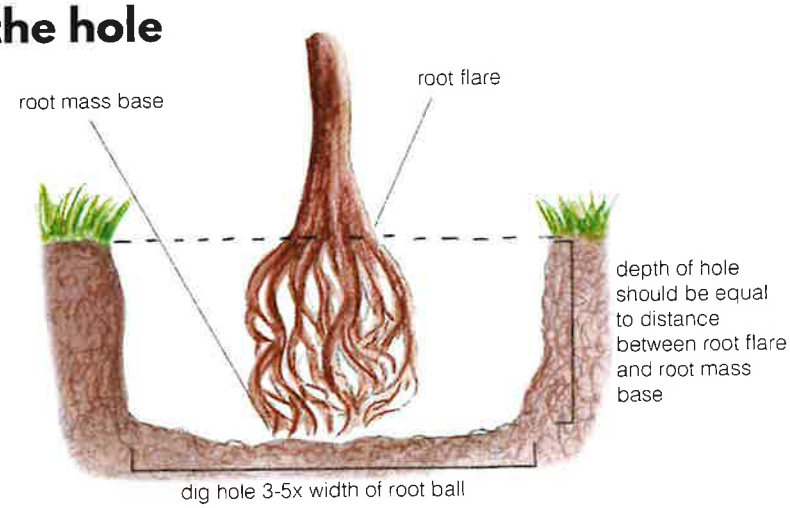
potted tree

balled and burlapped tree

Some trees are grafted. If there is a graft, it will be above the root flare.

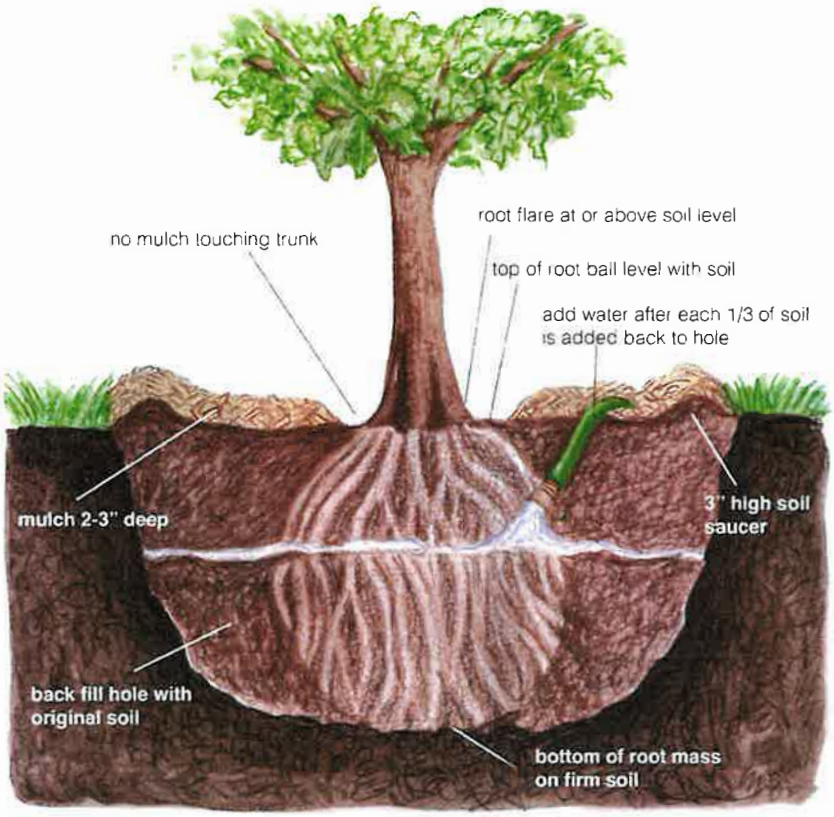
3 Measure for and dig the hole

Measure from the root flare to the bottom of the root ball to determine hole depth. Dig the hole 3-5 times the diameter of the root ball.



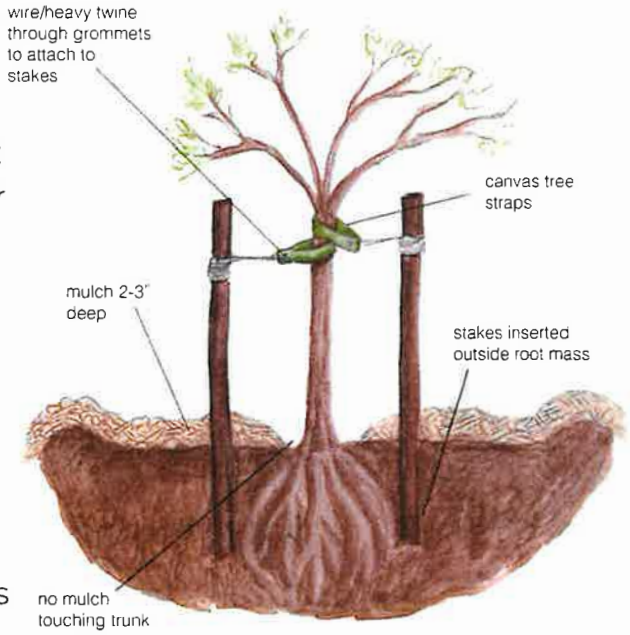
4 Set the root ball in hole and water

Remove the wire basket, if present. Use a tarp to slide the tree into the hole if the root ball is heavy. Remove burlap (if present). Spread and separate roots if circling. Fill the hole in thirds with soil originally removed. Eliminate any air pockets after each addition. Water and let drain after each soil addition.



5 Finish up

- **Build a 'soil saucer'** (narrow berm) at least 3" high around the hole edge for a water reservoir. Fill it with water, and let it drain.
- **Mulch** no more than 3" deep inside the saucer area. Mulch should not touch the trunk.
- **Stake** bare root and small trees for one year only. Install two opposing stakes outside the root mass. Loop flat canvas tree straps with grommets around the trunk. Attach to stakes with wire via the grommets.



Illustrations by Evie Woltil Richner
https://www.eviewoltilrichner.com

Proper Mulching Techniques

Mulching is one of the most beneficial practices a homeowner can use for better tree health.

Mulches are applied to the soil surface to maintain moisture and improve soil conditions. However, if misapplied, mulch may have little, or even negative, impact on trees.

Benefits of Proper Mulching

- Reduces soil moisture loss through evaporation.
- Controls weed germination and growth.
- Insulates soil, protecting roots from extreme summer and winter temperatures.
- Improves soil biology, aeration, structure (aggregation of soil particles), and drainage over time.
- Increases soil fertility as certain mulch types decompose.
- Inhibits certain plant diseases.
- Reduces the likelihood of tree damage from string trimmers and lawn mowers.
- Gives planting beds a uniform, cared-for look.

Trees growing in a natural forest environment have their roots anchored in a rich, well aerated soil full of essential nutrients and soil microorganisms. The soil is blanketed by fallen leaves and other organic materials that organisms break down to release nutrients into the soil. This environment is optimal for root growth and mineral uptake.

Urban landscapes and new developments, however, are typically harsher environments with poor-quality soil, reduced organic matter, and large fluctuations in soil temperature and moisture. Many benefits of the natu environment can be replicated, while maintaining a formal appearance, with the application of an organic mulch.

Types of Mulch

Organic Mulch

- Examples include wood chips, pine needles, hardwood and softwood bark, cocoa hulls, leaves, compost mixes, and a variety of other products usually derived from plants.
- Decomposes in the landscape at different rates depending on the material, climate, and soil microorganisms present.
- Requires more replenishing depending on how fast it decomposes.

Inorganic Mulch

- Examples include various types of stone, lava rock, shredded rubber, and other materials.
- Does not decompose or need to be replenished often.
- Does not improve soil structure or provide nutrients.

Not Too Much!

Too much mulch can be harmful. The recommended mulching depth is 2–4 inches (5–10 cm). Unfortunately, many landscapes are falling victim to a plague of over mulching.

"Mulch volcanoes" are excessive piles of mulch materials applied around the base of trees.

While organic mulches must be replenished over time, buildup can occur if reapplication outpaces decomposition or if new material is added simply to refresh color.

Deep mulch can be effective in suppressing weeds and reducing maintenance, but it often causes additional problems.

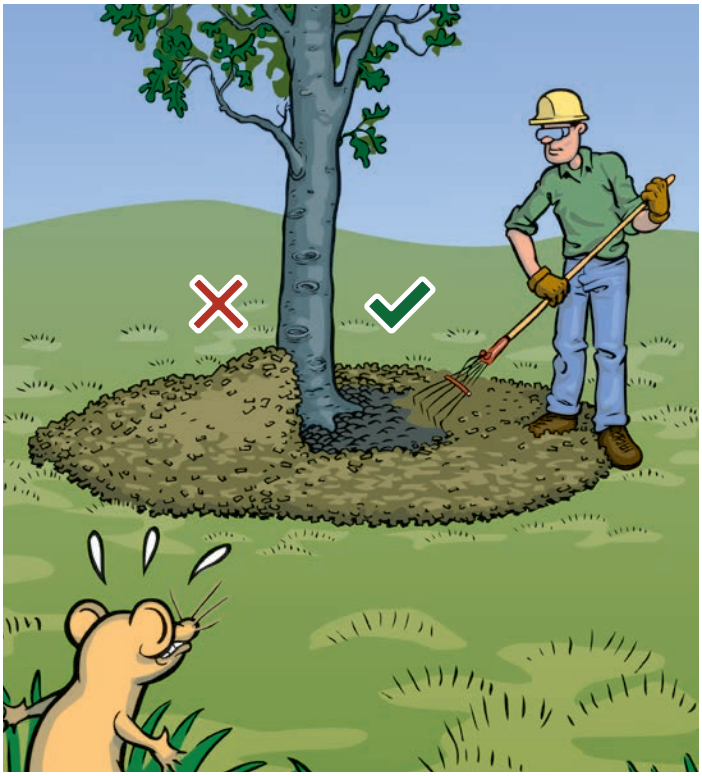
Problems Associated with Improper Mulching

- Applying mulch against the trunk or stems of plants can soften the tissues, making them more susceptible to the development of insects and diseases *(see figure top right)*.
- Mulch against the trunk can also lead to the growth of stem girding roots. This type of root growth can reduce tree growth or eventually kill the tree.
- Thick blankets of fine mulch can become matted and may reduce the penetration of water and air.
- On wet soils, applying more than 2 inches (5 cm) of organic mulch can reduce soil drying, which can lead to excess moisture in the root zone, which can stress the plant and cause root rot. In these cases, it may be best to leave bare ground exposed or to use a thin layer of inorganic mulch.
- Some mulches, especially those containing fresh grass clippings, can affect soil pH and may eventually lead to nutrient deficiencies or toxic buildups. Anaerobic "sour" mulch may give off pungent odors, and the alcohols and organic acids that build up may be toxic to young plants.

Guidelines for Applying Mulch

The choice of mulch and the application techniques are important to the health of landscape plants. The following are guidelines for applying mulch:

- For well-drained sites, apply a 2–4 inch (5–10 cm) layer of mulch. Fine mulches, such as composed materials, should be applied in a 2–3 inch layer and coarse mulches, such as arborist wood chips, should be applied in a 3–4 inch layer.
- Apply mulch near, but not touching, the trunk and extend to the drip line, if practical. If it is not practical to apply mulch to the drip line, apply as far out as you can. Generally, a 3 foot (1 meter) radius ring is the minimum for most trees.
- If the species you are mulching has symptoms related to a pH problem, select a mulch that can aid in correcting.
- If mulch is already present, check the depth. If sufficient mulch is present, break up any matted layers and refresh the appearance with a rake. Some landscape maintenance companies spray mulch with a water-soluble, vegetable-based dye to add color to faded material.
- If mulch is piled against the stems or tree trunks, pull it back several inches/centimeters so that the base of the trunk is exposed *(see figure top right)*.
- Fresh arborist wood chips, especially those that contain bark and leaves, are an excellent material to apply around trees and large shrubs.



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