

## Recommended Trees

Environmental conditions in Nebraska make it difficult for many trees to survive or grow well. Various soil types, heat, fluctuating winter temperatures, desiccating winds and drought all contribute to stressful conditions for trees. The following list is a guide for selecting trees to plant along streets, in parks, at schools and other public areas as well as private yards. For specific recommendations on the tree species listed below, visit with your local nursery professional.

### Small Trees (under 20' tall)

- buckeye, red
- hawthorn: cockspur, Russian
- maple, tatarian (Hot Wings)
- oak: dwarf chinkapin, gambel
- plum: American, black (Princess Kay)
- serviceberry (Autumn Brilliance)
- lilac, Japanese tree (Copper Curls, Ivory Silk)



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### Medium Trees (20-40' tall)

- buckeye, Ohio
- corktree, amur
- hophornbeam
- maple: bigtooth (Rocky Mountain Glow), black, miyabe (State Street), sugar (Caddo, Green Mountain)



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### Large Trees (over 40' tall)

- catalpa, northern
- coffeetree, Kentucky
- elm: American & hybrids, lacebark
- ginkgo
- linden: American (native), silver
- oak: bur, chinkapin, English, swamp white, white & hybrids
- osage-orange (White Shield, Wichita)



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### Conifers or Evergreens

- baldcypress (deciduous conifer)
- douglas-fir
- fir, concolor
- juniper
- pine: bristlecone, Bosnian, eastern white, jack, lacebark, limber, mugo, pinyon, ponderosa, southwestern white
- spruce: Black Hills, Colorado, Norway, Serbian



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The Nebraska Statewide Arboretum has excellent plant material information for eastern and western Nebraska regarding site-specific information available at [arboretum.unl.edu](http://arboretum.unl.edu).

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## NEBRASKA FOREST SERVICE

# Tree Care Basics

### Finding the Root of the Problem

Rachel Allison, District Forester and Western Forest Health Assistant

Every year, homeowners search nursery catalogs and garden centers for the perfect tree to plant in their yards. They look for a tree that grows fast, isn't messy, provides abundant shade and is free of insect and disease problems. However once planted, staked, fertilized and nurtured, it struggles and grows very slowly or not at all. This common problem often begins with the roots.

There are three main types of damage or injury to root systems that can occur in young trees: root circling caused by a container, root damage and improper planting techniques.

**Circling roots caused by a container:** When roots are left in a container too long, they often grow in a circle. They fail to expand outward even when removed from the container, resulting in an underdeveloped root system that cannot supply enough water and nutrients to the tree. In some instances, a circling root can grow around the base of the tree, girdling it and interfering with absorption. Initially the tree appears healthy, but after several years it may decline in vigor and die.



Circling roots cannot supply sufficient water and nutrients to the tree.

**Root damage:** Roots can be crushed, broken or left behind during the lifting process in the field nursery or during transplanting. This most commonly happens to large caliper (1-3" diameter) balled and burlapped trees that have been mechanically lifted, wrapped and transported.

During cultivation, extra soil is often piled around the trunk of the young tree. If this extra soil is not removed before lifting, part of the lower root ball may be lost.

**Improper planting techniques:** Improper planting can consist of three common planting errors: too small of a site, too deep in the soil and soil without the proper nutrients.

A planting site that is too small can crowd roots so they cannot grow outward. A planting site should be at least 2-3 times wider than the diameter of the root ball since the majority of a tree's roots grow laterally away from the tree.



Chlorosis, dieback and general decline may be prevented with proper tree planting and care.

Trees are often planted too deep because of the way they appear in the container. In nursery containers, the majority of the roots are normally in the bottom of the container where they can absorb nutrients, water and air through holes at the base of the container. When planted, the main lateral root should be at the ground surface, rather than several inches below—as they often are within the container or burlap.

Another concern of improper planting is the soil. During construction, parent soil is commonly removed or covered with soil and construction debris, leaving planting sites that are low in organic matter, high in clay content, high in pH levels and usually compacted. Roots cannot readily penetrate these poor soils and the tree slowly declines over a few years.



# Tree Care Basics

Follow these basic care instructions to ensure a healthy life for your new tree.

## Chlorosis or yellowing

A common problem in Nebraska soils is the high pH level, which causes nutrients to be unavailable to tree roots. The lack of minerals, particularly iron, commonly causes a condition called “chlorosis,” an abiotic disease characterized by yellow leaves, slow growth, branch dieback and sometimes the eventual death of the tree. Symptoms are more severe among trees and shrubs planted too deep or planted in poorly drained, compacted soils or soils with high calcium content and pH levels above 7.5.

To correct these problems, applications of sulfur and/or iron can help lower the pH or, if the tree was planted too deep, soil can be lowered to the main lateral root by removing soil or by raising the tree and root system with a tree spade.



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## Understanding tree growth

Historically it was thought that a tree’s root system was exactly a mirror image of the crown; think of an hour glass with the crown shape identical to the root shape. A better analogy for the root system is that of a wine glass sitting on a dinner plate, with the plate representing the tree’s root system and the glass representing the tree.

A tree’s roots actually grow outward from the trunk a minimum of 1-2 times the height of the tree. Tree roots need oxygen to live and take up the majority of their water and nutrient needs within 18-24 inches of the soil surface. This is critical for the survival and growth of the tree.

Any mechanical or chemical work that comes in contact with this wide root zone affects the tree. Applying herbicides within 40-50 feet of a tree can damage the roots. A major problem for trees in urban environments is the use of herbicides—dicamba, 2,4-D, trimec and soil sterilants—along sidewalks, driveways, alleys and under fences.

## Proper mulching provides benefits

One of the best practices to encourage root development is to mulch around the base of the tree with organic mulch, such as wood chips, but it should not be piled on the stem or trunk where it can cause moisture buildup and rot. Research shows that tree root density is significantly greater under wood chips. However grasses, especially bluegrass, brome and other sod-forming grasses, are very competitive with tree roots, limiting root growth.

At minimum, a 6-foot diameter of mulch should be placed around young trees and can be increased to the dripline as the tree grows. For mature trees, this may mean an 8-12 foot circle. Injuries to the base of the tree reduce the amount of water, nutrients and food transported through the tree.

## Proper watering is critical

Too often trees in poor condition receive either too much or too little water. Setting specific guidelines for watering is difficult because of variable environmental and soil conditions. The goal is to keep the root ball moist, but not saturated. When planting a tree, check the soil moisture of the root ball and surrounding soil every day within the first 10 days. If dry within the top one to two inches, then water. Gradually reduce watering frequency to no more than once per week. Watering should be increased, however, during periods of extremely dry or windy weather.

Overwatering removes oxygen from the soil and creates a flood-like situation around the tree. In many landscapes, watering needs to be appropriate for both lawns and trees. Grass generally requires more water than trees, so extending the watering time while reducing the frequency is a good balance.

# Selecting and Planting the Right Tree

## 1. Select the proper tree species.

The local tree board, county extension personnel or arborist can recommend the most desirable trees for your area. Fast-growing trees are often not the most desirable. Homeowners also should select species that do not have a history of insect and disease problems. For example, oaks and other hardy species are better selections than green ash, which is highly susceptible to insect borers and heart rot.

## 2. Select a quality tree.

Healthy, vigorous trees in the home landscape add considerable value to the property. Extra care should be exercised whenever selecting a tree. Nursery stock sold at discount outlets or box stores can be of questionable quality as the source may be unknown or from an area that is not acclimated to Nebraska’s environment. Nurseries and garden centers that specialize in trees are more likely to offer better plant material.

When looking at individual trees, get acquainted with the nursery person and have them help you inspect the root system as well as the overall shape of the tree. Look for warning signs that might indicate the tree is pot- or root-bound, the soil around the roots is loose, or that the root ball is broken.

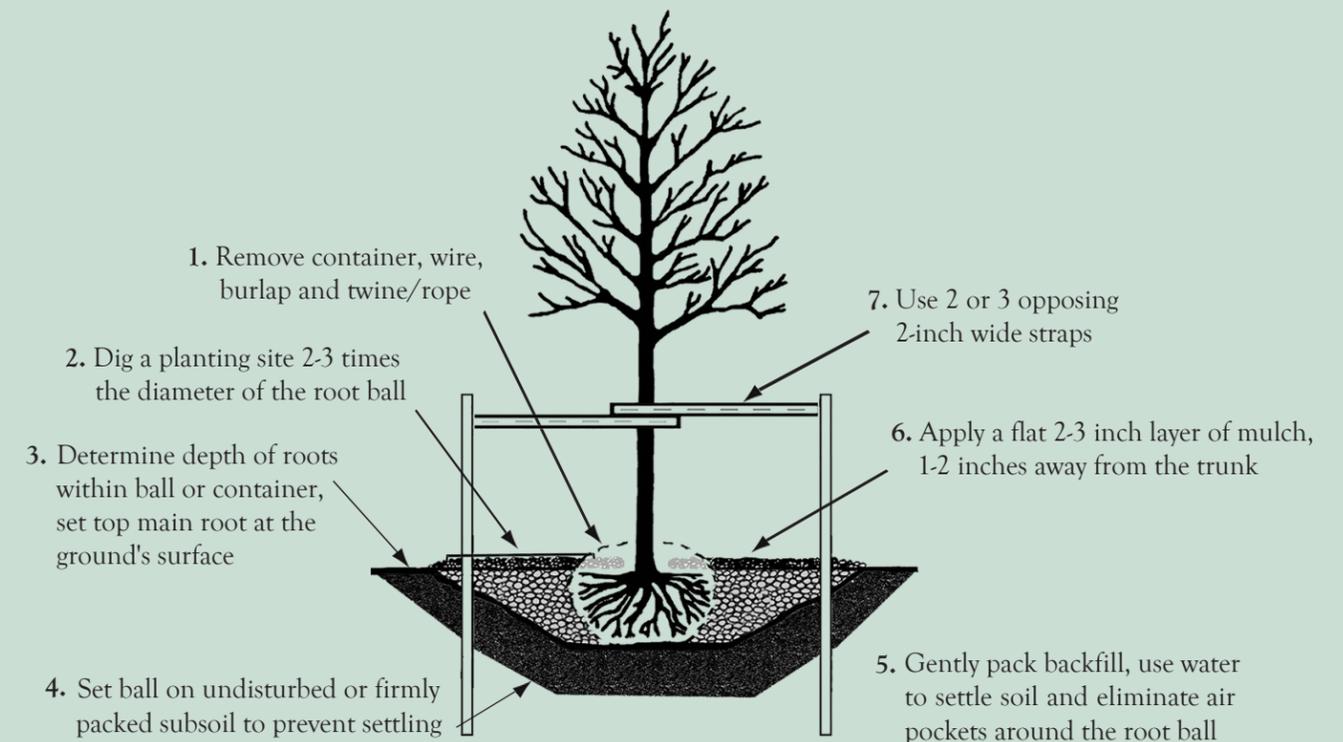
## 3. Plant the tree properly.

Tree-planting techniques have changed in the past 10 years or so. New recommendations include:

- Dig a planting site 2-3 times wider than the root ball.
- Place the tree so the top main root is at the ground's surface.
- Mulch an area at least 6 feet in diameter around the tree with organic mulch like wood chips.
- Do not use plastic or woven barrier under the mulch.
- Do not fertilize the tree at planting.

The key to having a healthy tree in your landscape is to keep the tree growing as vigorously as possible. Proper species selection, planting and maintenance can reduce stress on a tree and increase its natural resistance to insect and disease problems. Careful attention to the root system’s environment is critical for keeping trees healthy.

## HOW TO PLANT A TREE PROPERLY



Amy Estrada