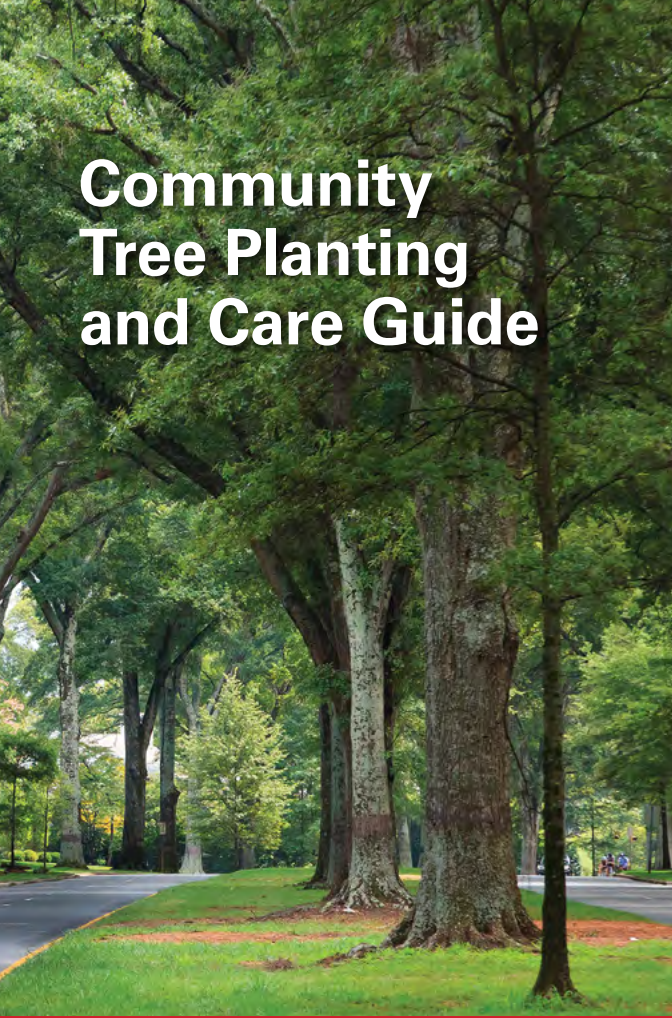
Community Tree Planting and Care Guide



IOWA STATE UNIVERSITY
Extension and Outreach

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Introduction

Sixty-four percent of Iowa's 3.1 million residents live in urban or community settings and trees play a major, but often silent, role in their lives. Trees along our streets, in our parks and public areas, natural areas, and private yards provide a wide range of benefits. Used properly, they improve the air we breathe, beautify the environment, provide wildlife habitat, reduce energy consumption during summer and winter, enhance our self-image, and generally make Iowa communities a more pleasant place to work and live.

In 1990, the Iowa Urban Tree Council (formerly Iowa Urban and Community Forestry Council) was established to provide guidance to the urban and community forestry movement through educational training, volunteer coordination, and technical assistance. Presented here are the current

recommendations of the Iowa Urban Tree Council and Iowa State University Extension and Outreach for tree selection, planting, and post-planting care. Take this booklet along as you plan, install, and care for trees destined to become tomorrow's community forest.

Plan Before Planting

Before any planting operation is initiated, consideration must be given to the planting site. Trees chosen for a project must fit their intended site spatially, be compatible with the given environmental conditions, and not pose unusual maintenance problems.

Important questions to be answered before planting begins are:

- What is the ultimate size and shape of the tree? Will it still fit the site in 20 or 30 years after increasing in height and width? Will the tree grow into power and communication lines?

- Will small trees with low-growing branches create problems for vehicular and pedestrian traffic?
- What maintenance will the tree require? Will the tree produce unwanted fruit or other undesirable

litter? Will the pruning needs of the tree and fall leaf drop create an unusual amount of landscape waste? Does the tree have serious insect or disease problems? Will the tree become a favorite roosting spot for birds? Will tree roots cause paved areas to heave or crack?

- Will the tree thrive in the site's microclimate and soil conditions? Will the tree tolerate alkaline soils (pH above 7.0), sun or shade, and wet or dry conditions?

- Will tree species tolerant of deicing salt be used near roadways? Will trees interfere with or suffer injury due to snow removal?
- Has appropriate and important attention been given to creating species diversity in the community tree population?
- Do tree selection criteria emphasize tree longevity, desirable ornamental characteristics, and site appropriateness instead of fast growth rate and low price?

- **Will tree planting take place in the vicinity of gas, water, steam, or cable conduits? Call Iowa One. Call (1-800-292-8989) or go to www.iowaonecall.com if you are unsure about the location of buried utilities.**

Inspect Trees Before Planting

Trees ordered from a wholesale nursery or local garden center should be inspected before they are planted. Any trees differing in size, age, species, or condition from what was ordered should be rejected and sent back to the nursery for refund or replacement. Reputable nurseries adhere to landscape plant specifications set forth in the *American Standard for Nursery Stock*. The following checklist will help you evaluate trees upon their arrival.

- **Size**—Trees should not deviate significantly from the dimensions specified in your order (trunk caliper, height, container or rootball size, degree of branching).
- **Form**—Numerous broken branches indicate mishandling. Shade trees should have a straight trunk with a well-defined central leader and equally spaced branches forming a symmetrical crown. Trees with multiple leaders and

narrow branch angles with included bark (bark between the branch and the trunk that turns inward), and trees pruned improperly (flush cuts) should be rejected.

- **Vigor**—Twigs and shoots should show signs of adequate growth either in the current or the previous year. Buds, bark, branches, and leaves should not be shriveled, desiccated, discolored, or show signs of insects or disease-causing pathogens.

- **Trunk appearance**—Discolored, sunken, or swollen areas on the trunk are warning signs to tree buyers. Cuts and scrapes on the bark are also undesirable. Finally, trees with small holes in the trunk (a sign of wood boring insects), and those with sunscald or cracks should be rejected.

- **Roots**—Rootball size for balled and burlapped trees is based on trunk caliper and must follow guidelines set forth in the *American Standard for Nursery Stock* (Table 1). The ball of earth should not be excessively wet or dry and should be securely held together by burlap and stout twine, and for larger trees, a wire basket. The trunk should be centered in the rootball and should not move independently of the rootball.

Trees purchased as "container-grown" should be well-rooted and established in the container in which they are sold. Roots of bare-root trees should arrive in moist burlap and packing, and should be damp and flexible.

Table 1. Appropriate rootball sizes necessary for full recovery of the tree after transplanting

Trunk caliper (inches)	Minimum rootball diameter (inches)
½	12
¾	14
1	16
1½	20
2	24
2½	28
3	32
3½	38
4	42
4½	48
5	54

Rootball depths carry the following ratios:

- Balls with diameters less than 20 inches — depth not less than 65 percent of the diameter of the ball.
- Balls with diameters 20 inches and up — depth not less than 60 percent of the diameter of the ball.

Planting Seasons

Newly installed trees will become established sooner if their planting date coincides with periods of rapid root growth (spring and early fall). However, other time periods from early spring through mid-autumn also are acceptable. Summer planting is possible but can be problematic when environmental conditions (high temperatures and minimal rainfall) make establishment difficult. Late fall planting (after late October) may also result in planting failures, particularly when winter arrives early or is unusually severe.

Care Before Planting

As trees await installation, they must be protected from mechanical injury, drying out, and overheating. Bare-root trees are especially susceptible to harmful drying of the roots. They should be held in a cool, sheltered location with the roots covered with moist straw, hay, or damp burlap. Similarly, balled and burlapped and container-grown trees are best held in a cool, shady area and kept moist until

they are planted. The best protection is to plant trees as soon as possible after they are delivered to the job site.

Preparing the Planting Site

Planting holes should accommodate the plant's root system comfortably. The completed hole should be at least twice the width of the rootball or rootmass and just deep enough to allow the trunk flare to be level with or slightly higher than the surrounding grade (Figure 1). In heavy clay or poorly drained, compacted soils, the hole should be made even wider and dug to a depth that allows 2-3 inches of the rootball or rootmass to protrude above the surrounding grade (Figure 2). Do not dig deeper than necessary because the rootball or rootmass needs firm support below to keep it from settling. Planting too deep will make it difficult for roots to receive oxygen and can result in tree death. Soil removed from the planting hole should be used as backfill. Adding organic matter to the backfill has not proven beneficial to tree establishment.

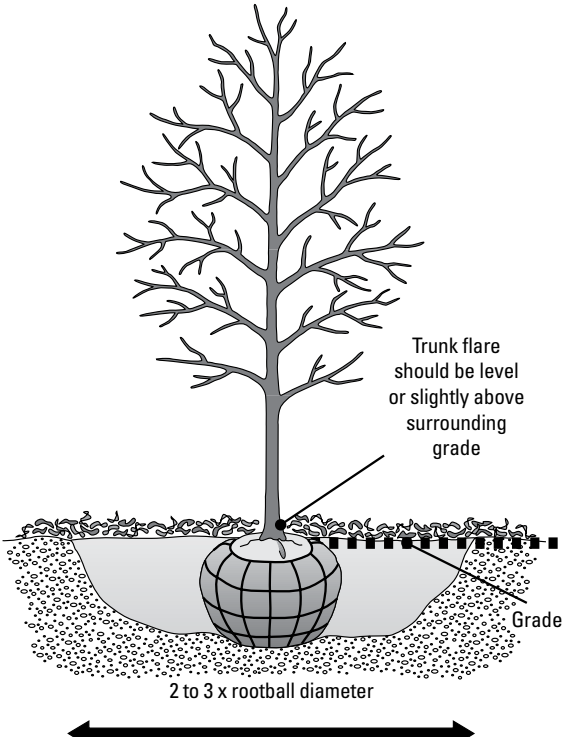


Figure 1. Planting method for well-drained soil

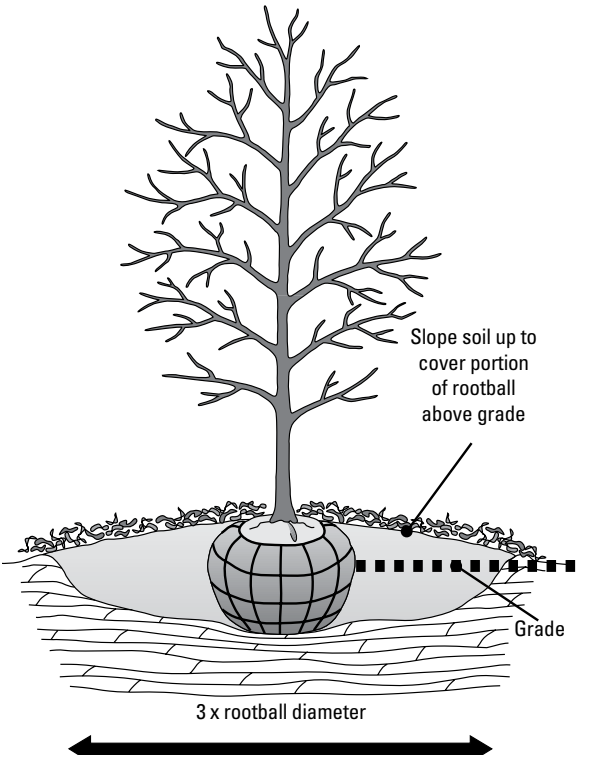


Figure 2. Planting method for poorly drained soil

The Planting Operation

Bare-root trees

- Prune damaged root tips with a clean, sharp pair of pruning shears.
- Build a firm, cone-shaped mound of soil in the middle of the planting hole (Figure 3).
- Spread the roots evenly over the mound.
- Alternatively, filter soil in around the roots while adjusting for proper depth of the roots and trunk flare.
- Adjust the tree's depth to correspond with its original depth in the nursery. The trunk flare should match the surrounding grade.
- Add backfill in layers over the roots until the hole is three-fourths full.
- Water or gently tamp to settle backfill and remove air pockets.

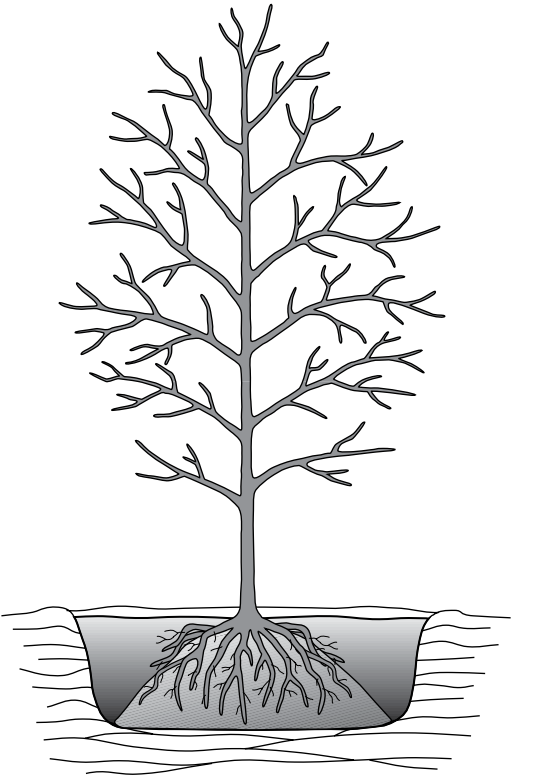


Figure 3. Planting method for a bare-root tree

- Straighten the tree if it settles to one side.
- Complete backfilling of the hole until backfill matches the surrounding grade and water again.

Balled and burlapped trees

- Always handle trees by the rootball. Currently, the necessity of removing the wire basket is under question, but if your intent is to completely remove it from the rootball, cut away the bottom third of the basket before the tree goes into the hole.
- Gently lift and lower or roll the rootball into the hole.
- Cut away and remove the remaining portions of the wire basket. Alternatively, cut and remove the top one-third of the basket from the rootball.
- Backfill layers of soil around the ball until one-half of the hole is full.

- Lightly tamp backfill with shovel handle or hands to eliminate air pockets.
- Remove all twine from around the tree trunk to eliminate the possibility of girdling.
- Remove the top one-third of the wire basket if it wasn't removed earlier.
- Cut away burlap from the top one-third of the rootball allowing water to freely penetrate to the roots.
- Complete backfilling and water thoroughly.

Container-grown trees

- Always handle trees by the container and not by the stem or trunk.
- Gently remove the plastic, metal, or fiber container and inspect for circling roots.

- Use your hands, pruners or a sharp knife to loosen or sever circling roots.

- Lower the tree into the hole making sure the trunk flare (sometimes buried deep in the rootmass) is at or slightly higher than the surrounding grade.
- Orient the tree in the desired direction and adjust so that it is vertically plumb.
- Follow the same procedures for backfilling and watering as described for balled and burlapped trees.

Sustaining the Newly Planted Tree

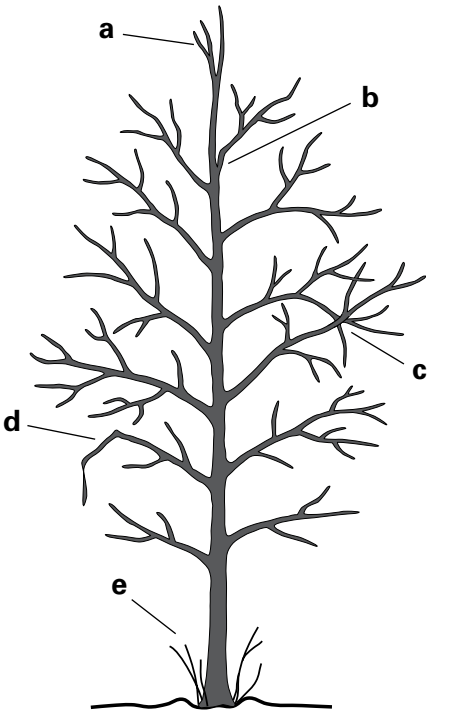
Mulching the ground around newly installed trees will help conserve moisture, reduce turfgrass and weed competition, and eliminate potential damage from lawn mowers and trimming equipment.

Mulches such as wood chips, ground bark, pine needles, or compost should be applied over the developing root system (usually out to the tips of the branches) to a depth of two to three inches. Mulch should not be in contact with the tree's bark because decay or rodent damage could result. Grass clippings should not be

used because they compress and mat together, restricting water and oxygen movement.

Fertilization at the time of planting is generally not recommended. Research has shown that fertilization is ineffective until the tree has partially re-established its root system.

Pruning at planting should be limited to alleviating problems and ensuring good branch structure. Do not thin a tree to compensate for root loss. Rather, prune to remove broken, crossing, crowded, or rubbing branches and any diseased tissue. Remove basal sprouts, encourage a central leader, and eliminate narrow crotches with included bark (Figure 4). Pruning paints or sealers do not prevent decay or promote rapid wound closure and are not recommended. Leave lower branches on trees to stimulate root and trunk diameter growth. In general, two-thirds of the tree height should be left as crown (branches and leaves).



(a) Remove a competing terminal leader,
(b) Eliminate narrow (weak) crotches,
(c) Eliminate crossing or rubbing branches,
(d) Remove broken, damaged, or diseased branches,
(e) Remove basal sprouts

Figure 4. Pruning a deciduous tree after planting

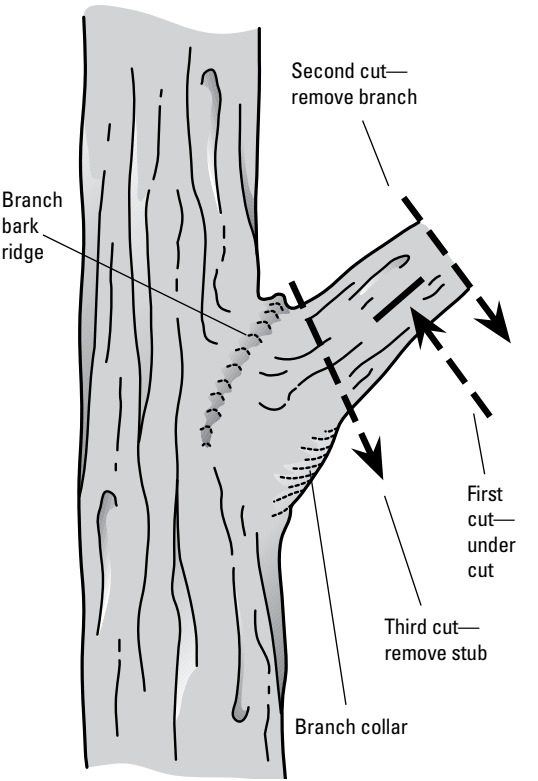
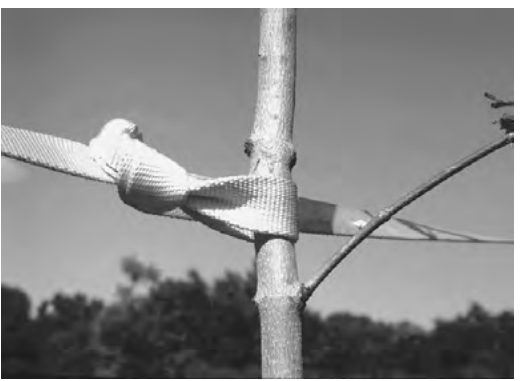


Figure 5. Proper branch removal

Whenever removing branches back to the trunk, always cut just outside of the branch bark ridge, thereby preventing injury to the branch collar (Figure 5). Careful pruning will promote rapid wound closure and inhibit spread of decay in the trunk.

Staking or guying large trees, bare-root trees, or those having high wind resistance, such as evergreens, especially on exposed sites, is an important ingredient to successful tree planting. Stakes for support should be attached to



the tree low on the trunk with flexible web belting or any strong, soft, wide strips of material to prevent girdling injury. The purpose of staking or guying is to prevent movement of the lower trunk and root system. Movement of the top is desirable and will strengthen the tree.

Watering is the single most important task for new tree owners, but watering timetables are almost impossible to give. As a general rule, trees planted in the spring or summer may require supplemental irrigation one to three times a week in the first few months after planting. Daily irrigation may be required if weather conditions are extraordinarily hot, dry, and windy. At each watering apply about one to two gallons of water per inch of trunk diameter directly over the tree's developing root system. In later years, watering frequency can be reduced and the area to be watered enlarged as the root system grows and expands.

Keep in mind, the amount of water to be delivered depends on the amount of rainfall received, moisture-holding capacity of the soil, and drainage characteristics of the site. Newly planted trees should be inspected at least once a week to determine if watering is necessary, and more often during hot, dry weather. Remember, trees can be killed by overwatering.

Trunk protection may be needed for smooth, thin-barked species (crabapple, linden, and maple) to prevent sunscald injury. Standard paper tree wrap or the newer white synthetic wrapping materials may help prevent sunscald. Trunk wraps are applied from the bottom up so that it overlaps like shingles. Wrap up to the first major branch and secure with plastic expandable or duct tape (Figure 6). Tree wrap should be used from early November to late March and is not meant to be a permanent fixture on the tree.

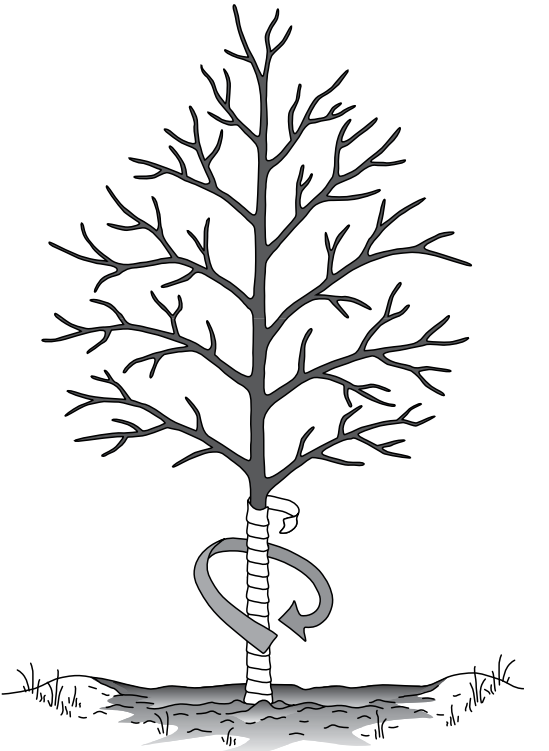


Figure 6. Tree wrap for trunk protection

Rabbits and mice also can damage the trunks of small trees during the winter. Protect trunks with wire mesh, hardware cloth, or other products specifically designed for this purpose.

Insect and disease pests often attack trees already under stress or weakened. Keeping trees healthy will reduce insect and disease problems. Regularly examine trees for unusual or suspicious spots, lesions, growths, or any other irregularity on the bark, branches, or foliage. If a pest is found, identify it before applying a pesticide.

Not all pests require control measures. Some cannot be treated practically or the time period for effective control may have passed. Sometimes simply pruning diseased branches from the tree or removing insects by hand will control a pest problem.

If uncertain about a diagnosis, consult a Certified Arborist, an Iowa Certified Nursery Professional, or the local ISU Extension and Outreach county office. These people can answer questions and suggest proper tree care practices.

Only the Beginning

Iowans recognize the many benefits trees bring to urban and rural communities. Trees remove carbon dioxide and other particulate pollutants from the air, help control erosion, block winter winds, reduce heating and cooling costs, add value to homes and businesses, and generally create a positive community image. If our community trees are to be healthy and long-lived, careful attention must be given to their selection, planting, and management. Every tree planted will require care over the decades of its life span. Plans for future, ongoing maintenance must be a part of every tree-planting program.

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