

# Community Tree Planting and Care Guide

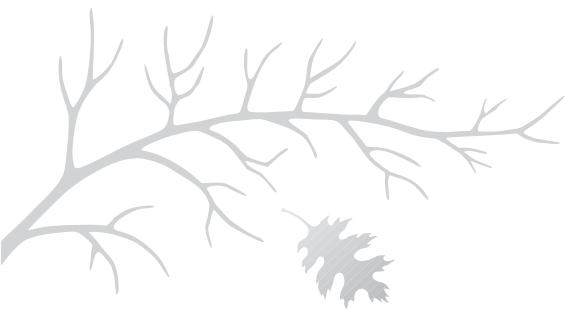
IOWA STATE UNIVERSITY  
University Extension

PM 1591 Revised September 2007

# Community Tree Planting and Care Guide

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## Introduction

Sixty-one percent of the 2.9 million Iowans 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 in 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 and Community Forestry Council was established to provide guidance to the urban/community forestry movement through educational training, volunteer coordination, and tech-

nical assistance. Presented here are the current recommendations of the Iowa Urban and Community Forestry Council and Iowa State University for tree selection, planting, and after-care. Take this booklet along as you plan, plant, and care for trees that will 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?



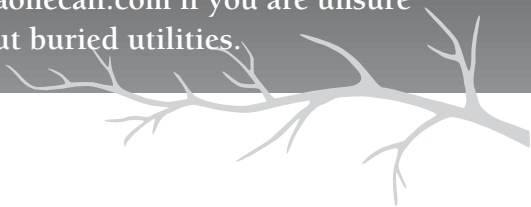
- What maintenance will the tree require? Will the tree produce messy fruits and seeds? Will the pruning needs of the tree and fall leaf drop create an unusual amount of landscape waste? Does the tree have serious insect and/or disease problems? Will the tree become a favorite roosting spot for birds? Will trees crack sidewalks and other paved areas?



- 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 drought conditions?

- Will tree species that tolerate deicing salt be used near roadways? Will trees interfere with snow removal?
- Has attention been given to creating species diversity in the community tree population?
- Do tree selection criteria emphasize longevity, desirable ornamental characteristics, and site appropriateness instead of fast growth rate and 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](http://www.iowaonecall.com) if you are unsure about buried utilities.



## Inspect Trees Before Planting

Trees ordered from a wholesale nursery or local retailer 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 have the dimensions specified in your order (trunk caliper, height, container or rootball size, degree of branching, etc.).
- **Form**—Trees should be typical of their species or cultivar. Numerous broken branches are a sign of 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**—Stems 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.

- **Trunk appearance**—Discolored, sunken, or swollen areas in the trunk are warning signs to tree buyers. Bark cuts and scrapes are also undesirable.

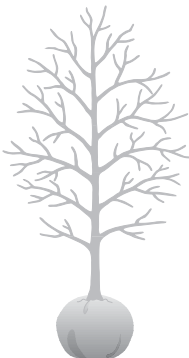


Finally, trees with visible wood borer (insect) galleries in the trunk, and those showing signs of sunscald or cracking should be rejected.

- **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 they 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)
1/2		12
3/4		14
1		16
1 1/2		20
2		24
2 1/2		28
3		32
3 1/2		38
4		42
4 1/2		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**

The best time to plant trees is in early spring, well before bud break. Bare-root trees can be planted as soon as soils become workable in early spring, but should be installed before buds swell and new growth begins. Besides early spring, container-grown and balled and burlapped trees may be planted later in spring, in early summer, or early fall. Plantings made in mid-summer (July and early August), late fall, and winter (November to early March) are more prone to failure.

## **Care Before Planting**

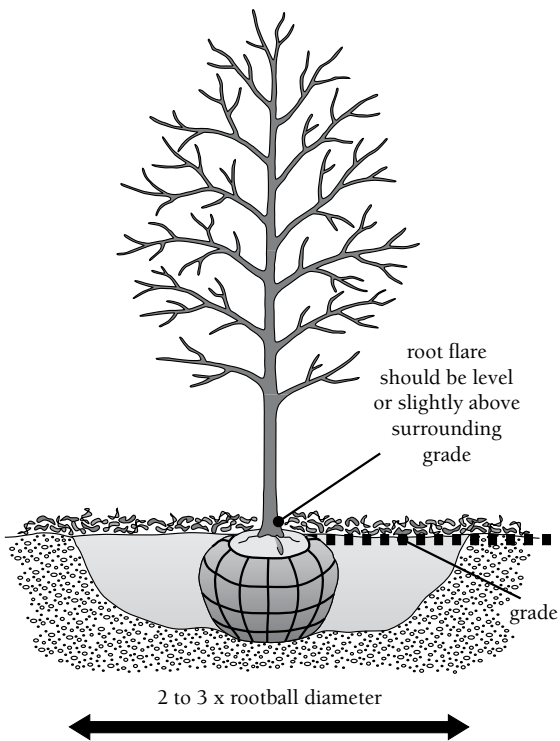
As trees await installation, they must be protected from mechanical injury, drying out, and overheating. The best protection is to plant trees as soon as possible after they are delivered.

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

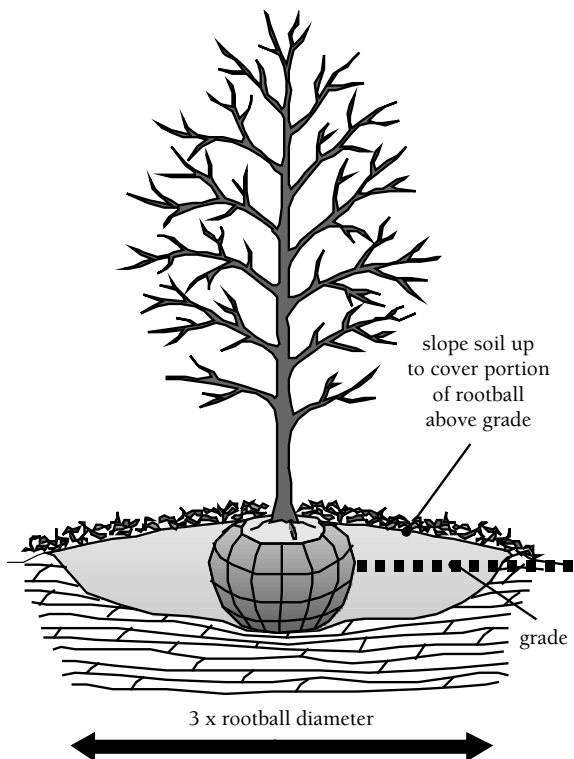
with moist straw, hay, or damp burlap. Similarly, balled and burlapped, and container-grown trees are best held in a cool, shady area and kept moist until they are planted.

## **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 root flare or 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 even wider and shallow so that as much as one-third of the rootball or rootmass protrudes above the surrounding grade (Figure 2). Do not dig deeper than necessary because the tree needs firm support below to keep it from settling.



**Figure 1. Planting method for well-drained soil**



**Figure 2. Planting method for poorly drained soil**

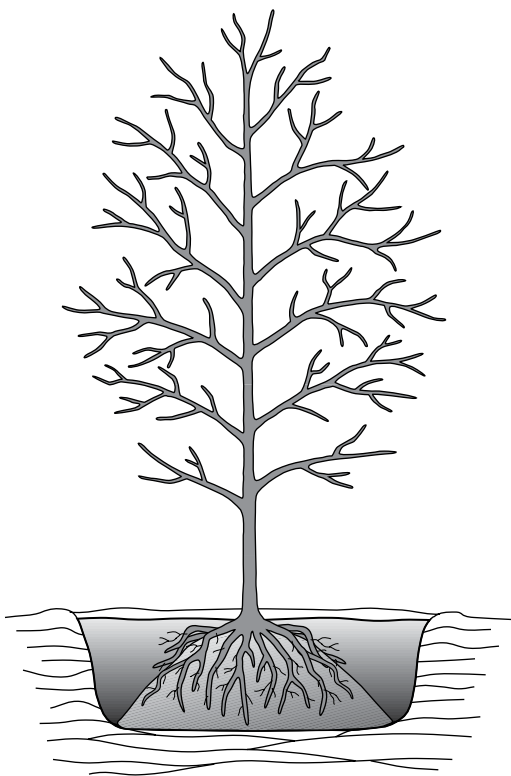


Planting too deep will make it difficult for roots to receive oxygen and can result in tree death. Soil removed from the planting hole should be used as backfill. Adding organic matter to the backfill has not proven beneficial to tree establishment.

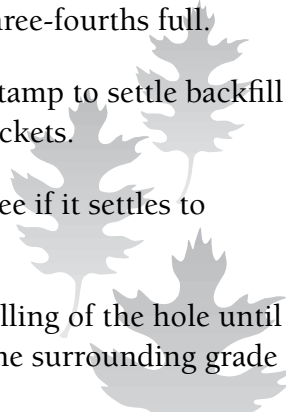
## **The Planting Operation**

### **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 (Figure 3).
- Adjust the tree's depth to correspond with its original depth in the nursery. The root flare or trunk flare should match the surrounding grade.



**Figure 3. Planting method for a bare-root tree**

- 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.
  - 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.
- Remove the wire basket if the integrity of the rootball will not be compromised.
- Gently lift and lower or roll the rootball into the hole.
- 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 or rootmass.
- Gently remove the plastic, metal, or fiber container and inspect for circling roots.



- Make four or five vertical cuts along the side of the rootmass with a sharp knife to sever circling roots and help trees get established.
- Lower the tree into the hole making sure the top of the rootmass is at or slightly higher than the surrounding grade.
- Face 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.

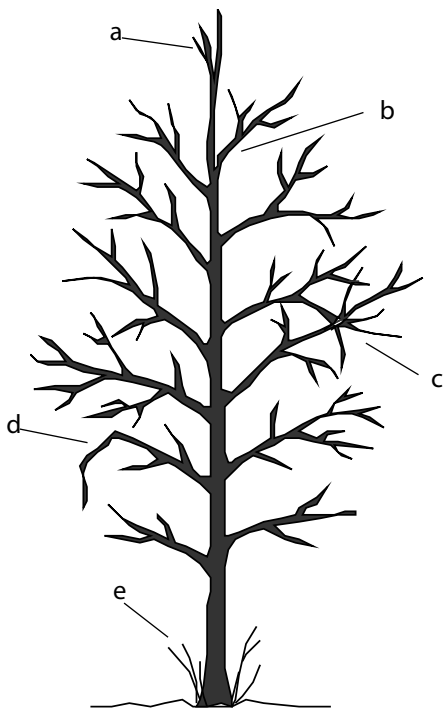
**Pruning** at planting time should be limited to alleviating problems and ensuring good branch structure. Do not thin a tree to compensate for root loss! Rather, prune to remove broken, crossing, crowded, or rubbing branches and any diseased tissue. Remove basal sprouts, encourage a central leader, 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).

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.

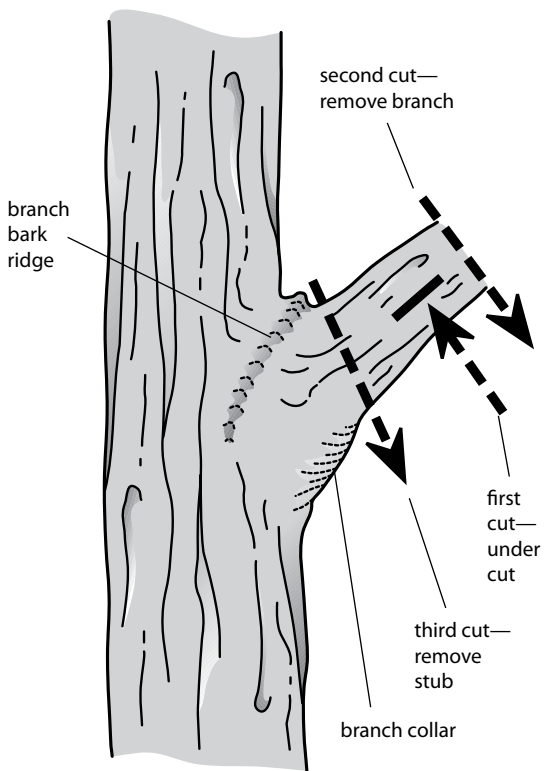
**Staking or guying** large trees, bare-root trees, or those having high wind resistance, such as evergreens, especially on exposed sites, is an important ingredient to successful tree planting. Stakes for support should be attached to the tree low on the trunk with flexible web belting or any strong, soft, wide strips of material to prevent girdling injury. The purpose of staking or





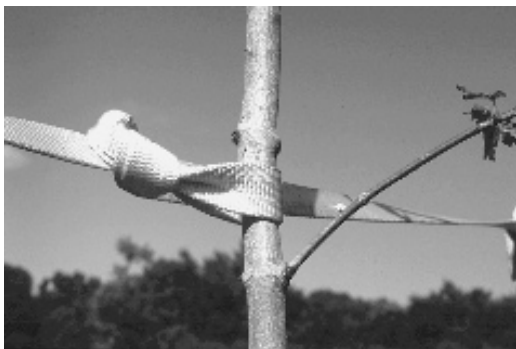
- (a) remove a competing terminal,
- (b) eliminate narrow (weak) crotches,
- (c) eliminate crossing or rubbing branches,
- (d) remove broken, damaged, or diseased branches,
- (e) remove basal sprouts

**Figure 4. Pruning a deciduous tree after planting**



**Figure 5. Proper branch removal**

guying is to prevent movement of the lower trunk and root system. Movement of the top is desirable and will strengthen the tree.



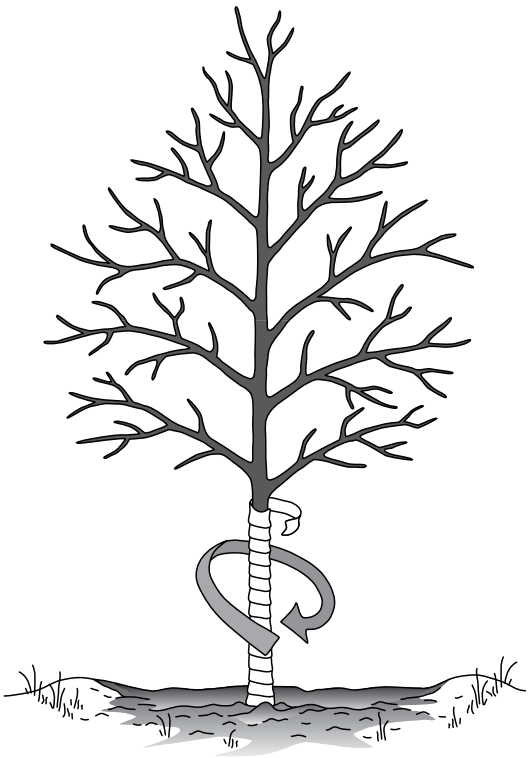
**Watering** is the single most important task for new tree owners, but watering timetables are almost impossible to give.

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 root-ball. In later years, watering frequency can be reduced and the area to be watered enlarged as the root systems grows and expands.

But 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 (crape, linden, maple) to prevent



**Figure 6. Tree wrap for trunk protection**

sunscald injury. Standard paper tree wrap or the newer white synthetic wrapping materials should be 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 during the four- to five-year establishment period. 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 you think you've

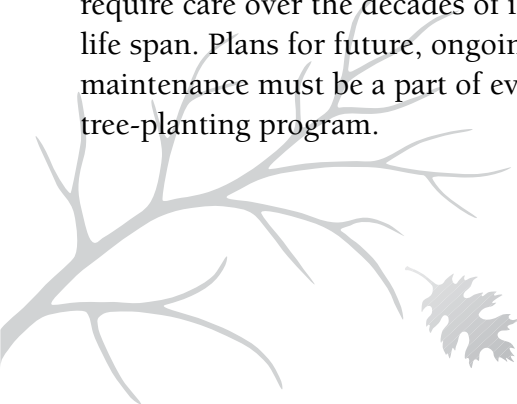
found a pest, identify it before applying a pesticide.

Not all pests require control measures, some cannot be treated practically, and/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 you are uncertain about your diagnosis, consult a Certified Arborist, an Iowa Certified Nursery Professional, or your local Iowa State University Extension County Office. These people can answer your questions and suggest proper tree care practices.

## Only the Beginning

Most 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.

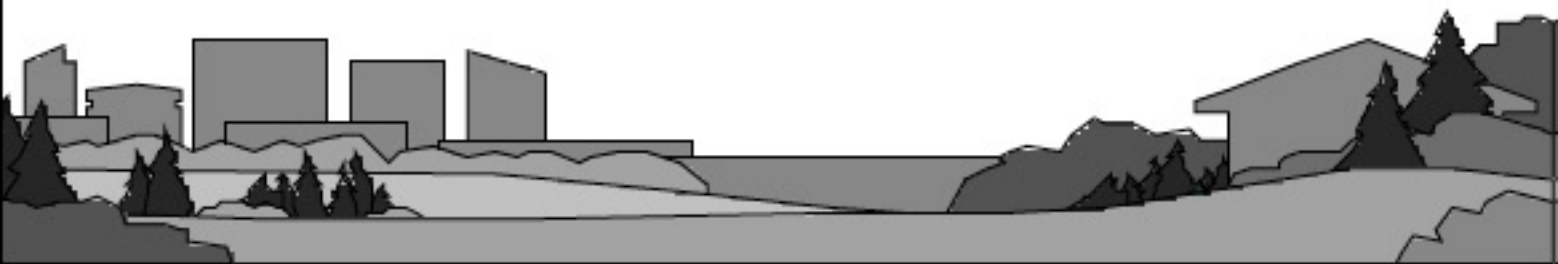




*This booklet was prepared with the support of the Iowa Department of Natural Resources, Forestry Division and the Iowa Urban and Community Forestry Council. Funds for this project were supplied by the Northeastern Area State and Private Forestry, USDA Forest Service.*

*Illustrations and graphic design by Jane Lenahan.*





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