

G. Tennessee Urban Riparian Buffers: How to Plant Trees and Shrubs

Preparing a Site for a Planting

The state of Tennessee requires that any landowner who digs on their property first contact Tennessee811 to have all underground utilities marked. This is done by calling 811 or submitting an e-request at <http://www.tnonecall.com>. Prior to the call, clearly mark the outline of the proposed buffer area to be planted with white flags, paint or stakes.

The TN One-Call website, <http://www.tnonecall.com>, contains a full description of this service. Key points include:

- The call must be made at least three business days prior to beginning digging.
- You will be provided a ticket number with a start date and time on it. The ticket is good for 15 days. That is, you are only allowed to dig during those 15 days.
- The utility companies will mark utilities using a required color coding system and will be identified by paint, stakes or flags.
- If any digging extends beyond the 15 days, you have to call 811 to obtain an extension on the ticket time.
- It is important to explain to children that the flags are not to be removed.
- Avoid digging within 24 inches on either side of the markings, or 10 feet within side of water or sewer lines. Check with your local utilities for additional digging stipulations adjacent to lines.

On-site tasks that may need to be done include:

- **Removing excess debris** like logs, branches or trash.
- **Mowing herbaceous materials** that are one foot or higher to make it easier to plant and to reduce initial competition for the bare root seedlings. It may be necessary to use a brush hog if the vegetation is particularly dense. Clearly mark any vegetation, shrubs or trees that are NOT to be mowed.
- **Removing invasive vegetation.** Certain nonnative plants like bush honeysuckle and Chinese privet, are often highly invasive in riparian areas and may need to be removed to allow for planting. See **Appendix E** for more information on how to remove invasive plants.

APWA Uniform Color Code for marking underground utility lines.

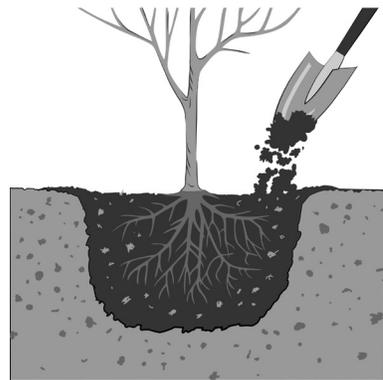
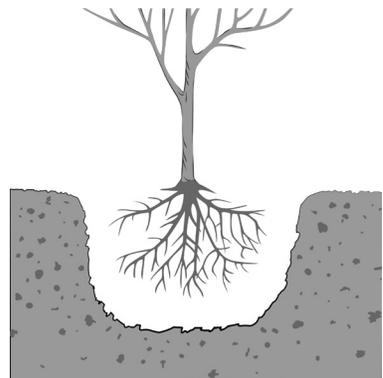
COLOR		Utility Line
WHITE		Proposed Excavation
PINK		Temporary Survey Markings
RED		Electrical Power Lines, Cables, conduit and Lighting Cables
YELLOW		Gas, Oil, Steam, Petroleum or Gaseous Materials
ORANGE		Communication, Alarm or Signal Lines, Cables or Conduit
BLUE		Potable Water
PURPLE		Reclaimed Water, Irrigation and Slurry Lines
GREEN		Sewer and Drain Lines

Properly Installing Plants

A common adage among gardeners is “for a dime-size plant, dig a dollar-size hole.” With that in mind, following are steps to properly installing bare root seedlings and container or balled and burlap plants.

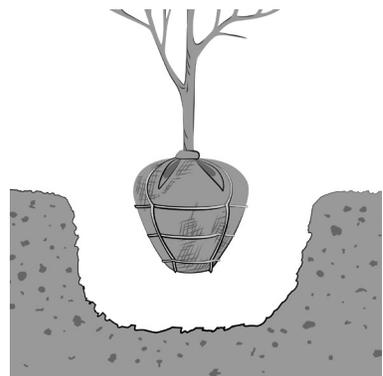
Bare Root Seedlings

- Keep roots damp, cool and out of the sun until ready to be planted.
- One to three hours prior to planting, remove seedlings from their shipping bags and place in buckets of water to hydrate the roots. Keep roots out of the direct sun.
- At the seedling planting site, remove about a two foot diameter circle of vegetation with a shovel or mattock. Consider composting this removed green waste or simply set it aside.
- Dig the hole two feet wide and deep enough for roots to remain straight.
- If a hole cannot be dug two feet deep, dig a horizontal trench out from the planting hole deep enough to bury long roots.
- Set aside excavated soil for backfill. It may be helpful, especially in areas of higher dense turf, to place the excavated soil into a five-gallon bucket so that it is not lost into the vegetation or turf.
- Set seedling in hole, ensuring it is straight and that the slightly swollen area just above where the roots begin (root flare) is about level with surface.
- While holding the seedling erect, backfill the hole using the excavated soil, being sure there are no exposed roots. Do not replace the excavated turf back around or near the seedling.
- Lightly tamp soil to eliminate air pockets, but do not compact the soil.



Container-Grown or Balled and Burlapped (B&B) Plants

- Protect plants from wind damage in transport to the planting site.
- Keep plants well watered until ready to plant.
- Dig hole twice the width of the container or root ball with sloping or flared sides wider at the top than at the bottom.
- Set container or B&B plant into hole to see if it is the right width and depth before removing the container or burlap. Adjust hole size as needed.



- **Container-grown:** Remove plant from container. If roots are “root bound” (e.g., roots wound tightly around the outside of the soil ball), tease or prune the roots loose. Place root ball in hole, spreading roots out.
- **Balled and burlapped (B&B):** Place trees in hole. Remove wires, strings or pins holding the burlap. Fold the burlap down the sides of the ball to the bottom of the hole. Burlap may be removed completely if done without disturbing the root ball.
- Position the tree so the root flare is at or just above the ground level and be sure that all roots will be buried when hole is backfilled.
- Backfill with soil, making sure trunk is straight. Do not use soil amendments.
- Tamp soil to eliminate air pockets.
- Apply three to four inch depth of mulch around the tree, keeping the mulch several inches away from the trunk. Mulch mounded high against trunks (a.k.a. ‘volcano mulching’) can promote plant disease.
- Stake large trees in windy areas. Remove staking after one year.
- Water, as needed, particularly through first growing season. Most plants ideally need about one inch of water per week. The following table converts this amount into gallons per week based on the canopy spread of the shrub or tree. These amounts may be doubled during extremely hot weather.



Plant Water Needs

Most plants ideally need about one inch of water per week. This table converts this amount into gallons per week based on the spread of the tree or shrub.

Water Amount (gallons/week)	Canopy Spread (feet)
0.5	1
2.0	2
4.5	3
8.0	4
12.0	5
18.0	6

During hot weather these amounts may double.

Maintaining and Protecting a Buffer Planting

Informing Your Neighbors: It is advisable to contact adjacent landowners prior to the planting to inform them of the buffer planting. By including a description of how the buffer's appearance will change over time, you can help to alleviate concerns neighbors may have over perceived property neglect.

Managing Vegetation: Once a riparian buffer is planted, it is generally recommended not to mow. "Weeds" will soon begin to colonize around the seedlings and take on more of an unkempt appearance. It is nature taking its course with early succession beginning. During this time it may be helpful to "maintain" the outer edge of the buffer, keeping vines and weeds from overtaking the edge trees and shrubs, and perhaps planting or sowing native wildflowers along the buffer edge.

- **Physical Access:** Paths will need to be periodically mowed or brush cut. Consider mowing to a height no less than four to six inches.
- **Visual Access:** Low-growing shrubs may be installed to create "view windows" to the waterway. It is inevitable that outside seed sources will migrate in and that periodic removal of unwanted species will be required. By walking these areas once or twice a year, newly germinated seedlings can be easily removed.

Removing Invasive Plants: Invasive plants can crowd out installed ones if not removed. Consider walking the buffer area twice a year to look for unwanted plants. Walking on an imaginary grid can help ensure the entire area is covered. When identified young, many invasive plants can be hand pulled (see Appendix E).

Long-Term Protection: It may be necessary to mount several signs along the outer edge of the planted area that indicate the buffer is a "no mow zone" and/or install temporary fencing to reinforce this message. The "now mow" sign can include information on buffer functions and a municipality's water quality hot line number.

The Tennessee Urban Riparian Buffer Handbook Series

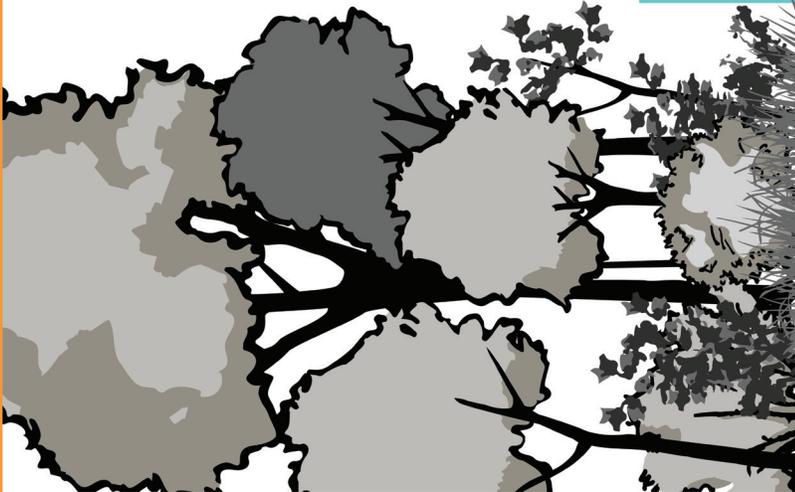
This handout is one of a series of supporting appendices to the **Tennessee Urban Riparian Buffer Handbook**. To download go to: <http://tn.gov/agriculture/topic/ag-forests-urban>

- A. The Tennessee Urban Riparian Buffer
- B. Tennessee Riparian Buffer Site Assessment
- C. Creating a Tennessee Urban Riparian Buffer
- D. Tennessee Native Riparian Plants List
- E. The Threat of Invasive Plants to Tennessee Urban Riparian Buffers
- F. Organizing and Conducting a Riparian Buffer Community Planting
- G. Properly Installing Plants: How to Plant Trees and Shrubs

Riparian Buffer On-Site Educational Signage Template

To download an editable template (in MS PowerPoint format) go to:
<http://tn.gov/agriculture/topic/ag-forests-urban>

Riparian Buffer Under Construction



This property is being planted with native trees and shrubs to create a healthy forested streamside buffer. The trees and shrubs will keep [stream name] clean by reducing streambank erosion and filtering pollutants. They will also provide aquatic and terrestrial habitat and improve air quality.

Be aware that initially this area may have a messy look. It is in its early ecological stages. As the plants mature, they will begin to shade out undergrowth.

For more information about riparian buffers, visit
[organization's name] website at [organization's website]

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