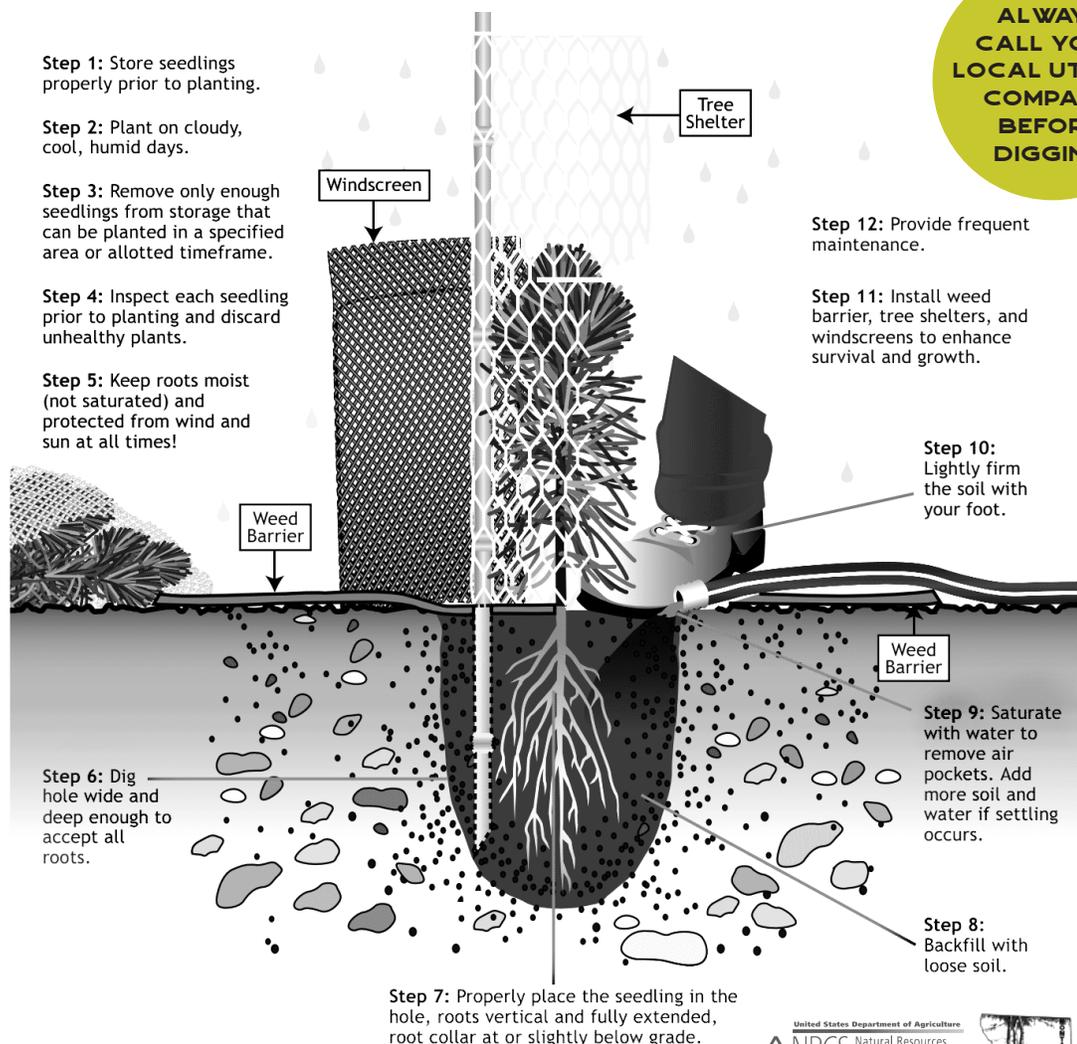


# HAND-PLANTING GUIDELINES FOR BAREROOT TREES & SHRUBS

Bareroot plants are one- to three-year-old nursery stock that are dug, stored, and shipped without soil or potting mix surrounding their roots. Bareroot plants are inexpensive, easy to plant, and offer field grown hardiness. They are an excellent choice for many hardwoods and some conifers used in conservation applications such as windbreaks, shelterbelts, living snowfences, buffers, riparian channel stabilization projects, reforestation programs, wildlife habitat enhancement plantings, xeriscapes, and more. Proper planting of bareroot seedlings is one critical step in a successful conservation planting that includes a good design, proper site selection and preparation, appropriate species selection, quality nursery stock, suitable temporary storage and handling, correct planting, and frequent, long term maintenance.

Follow these **12 steps** to successful installation of your bareroot plants!



# HAND-PLANTING GUIDELINES FOR BAREROOT TREES & SHRUBS

**STEP 1:** Store seedlings properly before planting. Ideal storage is 33 to 35°F, 95+% relative humidity, in a wind-protected, shaded area with the roots moist. Keep roots wrapped in moist burlap, peat moss, shredded paper, etc., to prevent drying.

**STEP 2:** If possible, plant on cloudy, cool, humid days. An old adage is, "The best days for planting are the worst for the planter." Avoid sunny, warm, dry, and windy conditions that desiccate seedling roots. Plant sensitive species like conifers in the early morning. Avoid planting when there is a risk of freezing the roots.

**STEP 3:** Remove seedlings from storage only as needed. Plant seedlings as quickly as possible after removal from storage. Do not leave roots exposed to drying conditions even briefly. Do not leave roots exposed when taking breaks, repairing equipment, preparing a hole, etc.

**STEP 4:** Cull unhealthy plants. Even quality bareroot stock deteriorates quickly without strict environmental control. Discard seedlings with dark molds, seriously damaged roots or shoots, or wrinkled, water-soaked bark.

**STEP 5:** Keep roots covered and protected at all times. Root systems should never be exposed to drying conditions, even briefly. Conifers are particularly sensitive. Dip roots in water for a few seconds after removal from storage. Keep roots covered with moist (not saturated) peat moss or burlap until directly before placement in the planting hole. Conversely, never leave seedlings in standing water.

**STEP 6:** Prepare an adequate planting hole. The hole should be two times wider and slightly deeper than the seedling root system. Holes too narrow or too shallow result in the problems depicted in Figure 1. Break through hard or plow pans if present.

**STEP 7:** Place seedling in hole. Hold the seedling vertically in the hole with roots hanging straight down and the root collar (stem:root system interface) at or just below grade. Adjust the size of the hole if any conditions depicted in Figure 1 exist.

**STEP 8:** Backfill the hole. Holding the seedling in place, gently backfill the hole with loose (not clumpy) soil. The final planting depth should place the root collar at or slightly below grade. Soil amendments are generally unnecessary although additions of peat moss to sandy soils improve water-holding capacity.

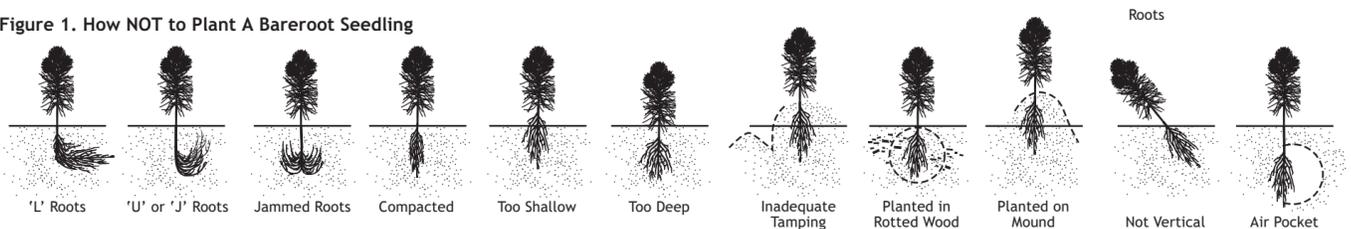
**STEP 9:** Saturate the hole. Use 3 to 5 gallons of water (more if necessary) to saturate the backfill and remove air pockets. Add water until a soupy consistency. If settling occurs, add more soil and water. If supplemental water is unavailable, firm the soil as described in Step 10.

**STEP 10:** Lightly firm the soil. After draining, lightly firm soil with your foot or hand to assure good root:soil contact and to secure the seedling in place. Never heel or stomp the backfill; it damages roots and soil structure.

**STEP 11:** Provide tree protection. Tree shelters, windscreens, and weed barriers enhance seedling survival and growth. Use ventilated tubes to provide animal protection. Screens or shingles on the southerly and windward sides of seedlings provide sun and wind protection during early establishment. Woven fabric controls weeds that compete for moisture, nutrients, and sunlight.

**STEP 12:** Monitor and maintain. Monitor weeds, soil moisture, and general plant health. Provide weed maintenance, supplemental irrigation, and plant care as needed over the growing season.

Figure 1. How NOT to Plant A Bareroot Seedling



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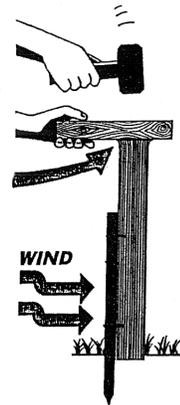
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## VOLUNTEER GUIDE

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# INSTALLING TUBEX

1. Drive the stake into the ground 1.5" from the tree, to a depth of 12-14" In open fields, drive the stake on the windward stop, 'stady certabs ire zhdes.ate pot the north side to prevent the stake from shading the tree.
2. Guide the TUBEX down the stake, making sure to loop the tie(s) over the stake as you go.
3. Gently slip the TUBEX over the tree. Be sure to keep the tree free of the ties as you lower the TUBEX into place.
4. Drive the base of the TUBEX 1" into the ground. This is critical. It forms an air-tight seal, to capture transpired water vapor. The easiest way to do this is by placing a 5 x 5" or bigger board over the shelter and rapping it with a mallet. When pounding TUBEX into sod, first loosen the ground and matted roots.
5. Pull the ties tight.
6. Place protective mesh over the top of the TUBEX, to prevent entry by birds.



### INSTALLING 1 FOOT TUBEX

1 foot TUBEX do not need to be staked. 1 footers are the only TUBEX that come without ratchet ties. To install, gently slip the shelter over the tree, and push the base 1" into the ground-somewhat farther on windy sites. They also come without a flared top. Very little bark abrasion occurs at this height.

## MESH BIRD GUARDS

**The mesh guard is an important part of the TUBEX system. Bluebirds and other cavity nesting birds sometimes enter TUBEX Treeshelters and become trapped. We supply, free of charge, a mesh guard that fits over the top of a TUBEX like a sock. It comes with all TUBEX 2 feet or taller.**

The guards last about a year before degrading. If the tree emerges from the TUBEX before then, simply remove the mesh. When used properly, the mesh protects wildlife while TUBEX helps create valuable habitat for the future.

We feel so strongly about the use of mesh with treeshelters we supply it FREE to anyone who already has treeshelters, whether they are TUBEX or not.

Special Note: Bluebirds often get trapped in other man-made openings, such as clothesline poles, stove pipes, and chimneys. The North American Bluebird Society recommends covering all such openings with wire mesh guards. For more information about bringing back the bluebird, write to NABS, Inc., P. O. Box 6295, Silver Spring, MD 20906-0295.