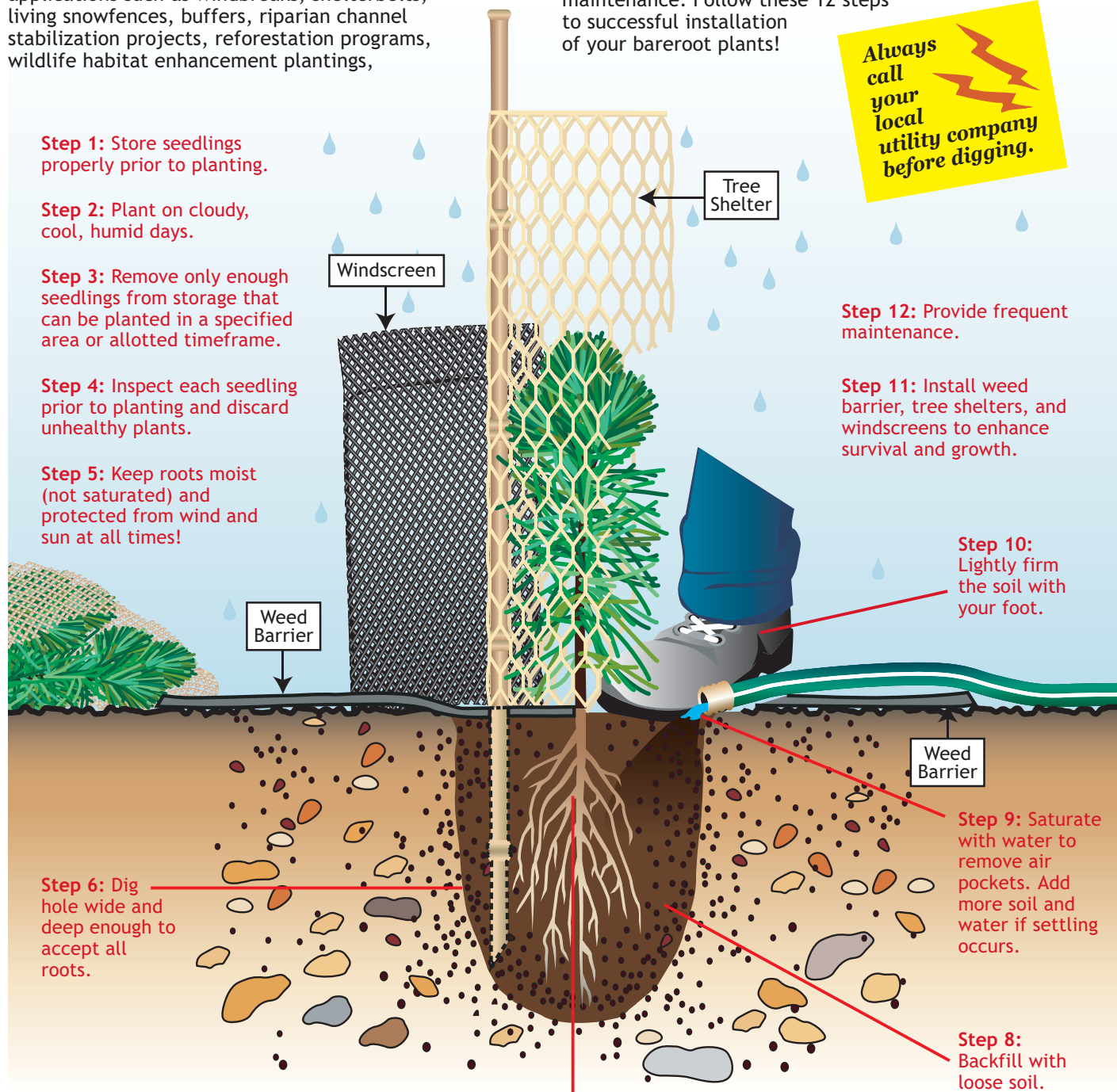


# Hand-Planting Guidelines for Bareroot Trees and Shrubs

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!

**Always call your local utility company before digging.**



**Step 1:** Store seedlings properly prior to planting.

**Step 2:** Plant on cloudy, cool, humid days.

**Step 3:** Remove only enough seedlings from storage that can be planted in a specified area or allotted timeframe.

**Step 4:** Inspect each seedling prior to planting and discard unhealthy plants.

**Step 5:** Keep roots moist (not saturated) and protected from wind and sun at all times!

**Step 6:** Dig hole wide and deep enough to accept all roots.

**Step 7:** Properly place the seedling in the hole, roots vertical and fully extended, root collar at or slightly below grade.

**Step 12:** Provide frequent maintenance.

**Step 11:** Install weed barrier, tree shelters, and windscreens to enhance survival and growth.

**Step 10:** Lightly firm the soil with your foot.

**Step 9:** Saturate with water to remove air pockets. Add more soil and water if settling occurs.

**Step 8:** Backfill with loose soil.



# Hand-Planting Guidelines for Bareroot Trees and 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.

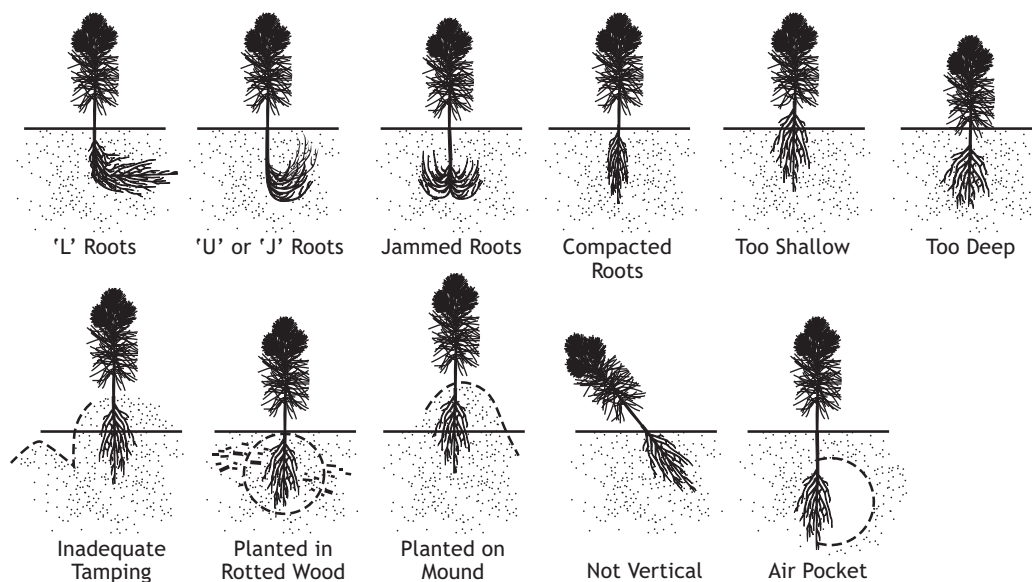
## Step 11

**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



- Before digging, always contact your local utility company to locate underground utilities!
- Always make sure that a plant's mature size will be appropriate for the site.
- Do not locate plants where they may eventually interfere with overhead power lines, pedestrian or vehicular traffic, or buildings.

*For additional information, contact your local nursery, county Extension Agent, or USDA Service Center.*

**Information for these planting guidelines provided by:**  
 USDA-NRCS Plant Materials Program  
 Montana Urban and Community Forestry Association  
 Montana Department of Natural Resources and Conservation

**Illustration by:**  
 Mary Myers, USDA-NRCS

The United States Department of Agriculture (USDA) prohibits discrimination in its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC, 20250-9410 or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.