



### How to Handle Bareroot Plants *(adapted from several sources)*

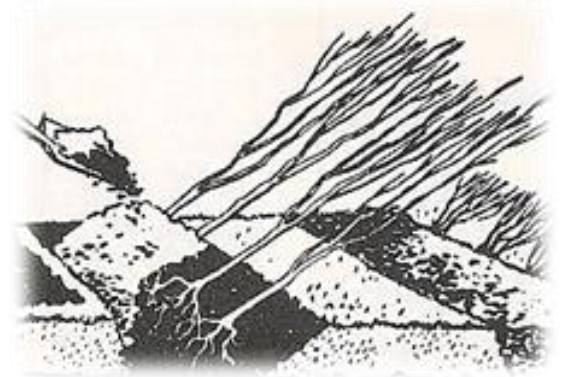
Bareroot plant material has some special handling requirements to ensure the best health and survival rate for your seedlings.

#### General

- Pay close attention to keeping stock cool, roots moist and protected from direct sunlight, wind and extreme temperatures.
- Most plants break bud easily after cold storage, but some require a little help (see “Sweating” below)
- See fact sheets for specific plant information

#### Before planting

1. Keep plant roots moist, cool and out of the sun.
2. Plants should be transplanted within 24 to 72 hours of receiving them, either in their permanent location, in a pot, or “heeled-in” (*image right*) until they can be planted permanently.
  - a. **Planting within 72 hours:** Keep plants in plastic packing and moisten packing material around roots; store in a cool, dark place.
  - b. **Planting between 3-5 days:** Re-pack plants in a box – or other container with drainage – in damp mulch, sawdust, shredded newspaper; compress to remove air; keep well-watered in a cool, shady place.
  - c. **To hold plants for a longer period**
    - i. **Pot up:** Plant in pots and keep well-watered through summer. Move to permanent location in early fall.
    - ii. **Heel-in:** Dig a trench, bundle plants closely, lay roots in trench & cover with soil. Keep well-watered until ready to plant in permanent location. **Caution:** *This has been known to result in an unusual looking hedgerow!*
3. Remove dead or withered roots and stems with a knife or shears.
4. Soak roots before sweating or planting
  - a. **Deciduous trees & shrubs:** Roots should be soaked for 4 to 6 hours before planting to ensure proper hydration. If possible, continue to soak roots while transplanting.
  - b. **Conifers:** Roots should be soaked for only 20-30 minutes.
5. Sweating
  - Most trees and shrubs show no adverse effects from being harvested in fall and stored under refrigeration until spring planting. Some species, however, enter *super dormancy* and must be forced into bud just before being planted. “Sweating” is a process that creates a super-humid, warm environment that coaxes buds to open.
  - Species known to sometimes need sweating: *Basswood, Birch, Black gum, Hackberry, Hawthorn, Hornbeam, Hickory, Lilac, Maple, Mountainash, Oak, Pear, Rose, Redbud, Sassafras, Serviceberry.*
    - a. **Method 1 – small stock: in a pot**
      - i. Pot up plants (after soaking roots), water well and place in plastic bag
      - ii. Secure top of bag loosely with twist-tie or rubber band to keep moisture in
      - iii. Keep in a warm, shaded location (60F+)
    - b. **Method 2 – larger stock: wrap in moist packing material**
      - i. Place layer of plastic or tarp on the floor of a garage or cellar that stays above 55F. Cover with moistened material like burlap, straw or shredded newspaper. After soaking roots, lay plants side-by-side.
      - ii. Completely cover plants from tip to root with several layers of moistened packing material and cover with plastic or tarp.
      - iii. Fold bottom plastic layer over edges of top layer to keep moisture in.



- c. *Method 3 – already planted stock (if after a couple of weeks buds have not swelled or opened)*
  - i. Enclose top of tree in white plastic bag and close off at trunk with twist-tie.
  - ii. Open daily to provide air circulation and allow heat to escape
- d. *All methods – may take several days to two weeks*
  - i. Check plants daily to see if buds have broken, the packing material or soil is still moist, and no mold is developing on the plants. *(If mold develops, rinse or wipe off with clear water)*
  - ii. Once buds begin to open: Plant in permanent location or leave in pot for fall planting. For already planted trees, simply remove bag.

## Planting

6. Make a hole with sloping sides, wide enough so the roots aren't crowded or bent and as deep as the root system, usually twice as wide as deep.
7. Make a cone of soil in the center of the hole, place the plant on it and spread the roots evenly around the hole. Twisted or circling roots may eventually girdle or choke the plant.
8. Position the plant so the line between the root and stem (called the crown line) is at ground level and the plant is vertical. *(See specific recommendations for grafted fruit trees)*
9. Amending soil is typically not recommended for seedling trees, with some exceptions. However, heavily amending soil will cause roots "to stay in the hole" rather than spread and provide anchorage for tree.
  - a. If soil is heavy clay or sand, adding about 1/4 organic matter (compost) to the backfill soil is recommended
  - b. Fruit and nut trees will also benefit from adding compost and micronutrients to backfill soil
10. Form a soil ring around the plant to create a watering basin. Water slowly to wet the soil thoroughly. Add soil as needed and a 1"-2" layer of bark mulch to help keep the soil cool and moist.
11. Water regularly, but do not overwater! Check soil for moisture and provide ~1" water per week. Less frequent, deep watering encourages roots to grow deep and is better than frequent, shallow watering.



## Maintenance

- For the first year or two, watch your trees closely for signs of moisture stress. If you see leaf wilting or hard, caked soil, water the trees well and slowly enough to allow the water to soak in. This will encourage deep root growth. Keep the area under the trees mulched and remove weeds and grass.
- Some species of evergreen trees may need protection against winter sun and wind. *A thorough watering in the fall before the ground freezes is recommended.*
- Young trees need protection against rodents, frost cracks, sunscald, lawn mowers, and weed whackers. Mice and rabbits frequently girdle small trees by chewing away the bark at snow level. Weed whackers are also a common cause of girdling. Plastic guards are an inexpensive and easy protection method.
- Frost cracking is caused by the sunny side of the tree expanding at a different rate than the colder, shaded side. This can cause large splits in the trunk. Light colored tree wraps can be used to protect the trunk from sunscald.
- Fertilization: After first year, provide plant nutrients based on soil test results and needs of specific plants.
- Wait two or more years to gradually begin removing a tree's lower branches. During early growth, these branches provide leaves for nutrition and encourage trunk strength.

Find more information and fact sheets on planting and caring for fruit trees, berries, trees and shrubs:

[www.knox-lincoln.org/plant-care](http://www.knox-lincoln.org/plant-care)

[www.knox-lincoln.org/landscapes-gardens-maine](http://www.knox-lincoln.org/landscapes-gardens-maine)

1. Make a hole with sloping sides, wide enough so the roots aren't crowded or bent and as deep as the root system,
2. Prune damaged roots, make a cone of soil in the center of hole, spread the roots evenly over cone and around hole. Twisted or circling roots may eventually girdle or choke the plant.
3. Position plant with crown line is at ground and firm soil with hands. *(See specific recommendations for grafted fruit trees)* If soil settles, gently lift & reposition plant.
4. Heavily amending soil is typically not recommended for seedling trees & can cause roots "to stay in the hole" rather than spread and provide anchorage.
  - a. If soil is heavy clay or sand, add about 1/4 organic matter (compost) to the backfill soil
  - b. Fruit and nut trees will also benefit from addition of compost and micronutrients to backfill soil
5. Form a soil ring around the plant to create a watering basin. Water slowly & deeply. A 1"-2" layer of bark mulch helps keep the soil cool and moist.
6. Water regularly, but do not overwater! Check soil for moisture and provide ~1" water per week. Less frequent, deep watering encourages roots to grow deep and is better than frequent, shallow watering.



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