Photo by Elisha Johnson

Tree Planting Procedure for Small, Bare Root Seedlings

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Tree seedlings receive foremost care while growing in a managed nursery: fertile soil, ample moisture, and weed/insect and disease control. Lifting seedlings out of this comfort zone shocks them. Consider: soil is dislodged from their roots, they are handled several times, packaged, shipped, exposed to threatening wind and heat, placed in planting bags or machine buckets, roots unveiled to open air, replanted in often very harsh soil, then left to high temperatures with the hope of adequate precipitation for sustenance through the first few growing seasons.

If planting steps are not very carefully followed, the mortality rate rises.

> *"It is better not to have planted, than to have planted incorrectly."*

Seedling survival is more likely if attention is given to the following:

Plant in Late Fall or Early Winter

In southern locations, November, December, and January are ideal months for planting seedlings (later months for northern locations). Tree roots grow during cooler months. By planting well before the growing season, roots will settle into their new environment, elongate, and begin preparing to supply water to the foliage when warmer temperatures arrive.

Plant on Cooler Days

Temperatures ranging between 35 - 60° F are ideal. Higher temperatures could cause transpiration rate to increase and dry the roots. (Transpiration is the process by which water vapor leaves a living plant and enters the atmosphere). Lower temperatures could freeze the roots, causing mortality.

Protect Seedlings During Vehicular Transport

Transporting seedlings in an enclosed vehicle is preferred to open-air transport. If open-air must be used, cover the bags of seedlings with a tarp. High winds increase transpiration rate, rapidly drying the roots. It is best to transport on cool days or at cooler times of the day.

Proper Seedling Storage

Seedlings will remain healthier if they are stored in an enclosed cooler where temperature and moisture are regulated. Keeping the air temperature low and humidity high will slow transpiration. Maintain air temperature at 35 - 38° F. Find a place to store your seedlings well ahead of their arrival from the nursery. When stacking bags of seedlings for long storage periods, criss-cross them, leaving large air gaps for better ventilation. Otherwise, heat will build near the center of the bags. If controlled facilities are not available or if the seedlings will quickly be planted in the field, store the seedlings in a cool, dark location, away from the wind (cellar, barn, etc.). Periodically inspect the roots and needles to determine if watering is necessary.

Seedling Treatment at the Planting Site

Once on-site, seedlings can deteriorate rapidly. High air temperature and wind place stress on seedlings (particularly when humidity is low). Park your transport vehicles in the shade, in lower spots, shielding the seedlings from destructive elements. Insulation tarps provide desirable protection. Avoid opening seedling bags until near the time of planting. Avoid exposing roots to the open air for very long. If air temperatures reach 75° F, planting should cease.

Large portable coolers are ideal for field storage of seedlings (a good consideration when selecting a contractor).

Methods of Planting

Two methods are used for planting tree seedlings: hand planting and machine planting. Both are acceptable. Hand planting is more common on steeper terrain or in forested areas that have recently been harvested. Hand tools are used to penetrate the soil and create an opening for the roots. Once the seedling is planted, the hole is resealed with the tool and foot pressure.

A machine planter is normally pulled behind motorized equipment with a 3-point hitch. The planter has a coulter (slicing through the soil), a foot (pulling the machine below surface level), trencher plates (opening the soil for seedling placement), and packing wheels to re-close and compress the soil. Machine planting as compared to hand planting, generally: has slightly better survival rate, delivers more consistency in spacing, and works best when converting old fields or pastures to forest.

Care should be taken not to "J" root seedlings, but rather leave the root in a natural, vertical position. Plant seedlings deep, at least to the original level planted while in the nursery (as noted by the darkened ring where the lower stem meets the roots). It's better to plant slightly too deep than too shallow. Make sure that all air pockets are sealed by applying pressure to the soil surrounding the seedling. Straighten seedlings as needed.

Conduct a Survival Check

For the first two summers after planting, conduct a survival check. If cost-share funds were used to establish the planting, it may be necessary to maintain a certain level of live seedlings. The original planting plan should have specified this minimum survival level. Your forester can assist with your survival check.

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Pine and hardwoods seedlings, as well as wildlife and habitat foods are available now for the 2004-2005 planting season at the AFC's Hauss Nursery.