

Seedling Planting & Care

Arkansas Forestry Commission (modified by Teddy Reynolds, BSF, RF, SR)
www.arkansastimber.timber

Bare root pine seedlings are vulnerable plants that require careful handling. The four primary rules for tree seedling care between the nursery bed and planting are:

- Keep seedlings moist.
- Keep seedlings cool.
- Handle seedlings gently.
- Keep storage duration short.

Every effort must be made to keep roots moist while the tree is out of the ground. The nurseries usually spray seedlings roots with clay slurry to reduce moisture loss. The trees are then commonly packed in moisture proof bags or boxes. Once a bag is opened, the seedlings should be planted immediately. Seedling roots must not be allowed to dry out! If a bag of seedlings is only partially used, the bag should be closed by rolling the top down, binding in place, and stored in a shady cool place.

Seedlings use stored food to survive transplant shock. These critical food reserves are depleted quickly if the trees are stored warm. To conserve this stored energy and promote seedling survival, trees should be stored as cool as practical without freezing. Inside bag temperature guidelines for storing bare-root tree seedlings are:

Storage for 1-5 Hours

Ideal	34° - 40°F
Tolerable	40° - 50°F
Risky	50° - 60°F
Damage Probable	60° - 80°F
Damage Occurring	Over 80°F

Storage for Over 5 Hours

Ideal	34° - 40°F
Tolerable	40° - 45°F
Risky	45° - 50°F
Damage Occurring	Over 50°F
Damage Occurring	Under 32°F

Seedling survival will suffer if seedlings are exposed to excessively high or low temperatures. The amount of mortality is directly related to the length of exposure to these temperature extremes. An exposure to 80°F for two hours can significantly reduce survival.

Seedlings must be protected from physical damage. Seedling bags should not be thrown or walked on. Physical abuse of the seedlings can lead to reduced seedling survival. Get professional advice before planting trees that have been excessively damaged.

As length of seedling storage increases, seedling vigor decreases. Under ideal conditions this loss in vigor is very slow. The farther storage conditions are from ideal, the faster the loss in vigor. Seedlings should be stored without refrigeration only when weather conditions permit. Even under ideal conditions, seedling storage should be kept as short as possible.

Seedling Transportation

Do:

- Transport seedlings in a refrigerated van with temperatures maintained between 34°F and 45°F whenever possible.
- Keep inside bag temperatures below 60°F.
- Keep truck beds free from pesticides and other chemicals.
- Keep truck beds from sharp objects.
- Promptly repair or replace torn bags.
- Shield seedlings from direct sunlight, wind, and temperature extremes.
- Minimize transportation time.
- Consider transporting trees at night.

Don't:

- ❌ Allow seedlings to freeze.
- ❌ Ship trees without refrigeration when truck temperatures exceed 70°F or below 33°F (regular and/or wind-chill factor).
- ❌ Stack seedlings more than two bags high without spacers to support weight.
- ❌ Walk on or stack heavy objects on seedlings.
- ❌ Routinely open seedling bags to inspect seedlings.

Refrigerated Seedling Storage

Do:

- Store seedlings in coolers if possible.
- Maintain cooler temperatures between 34°F and 40°F.
- Provide good air circulation around the bags.
- Plant trees as soon as possible after removal from cold storage.

Don't:

- ❌ Stack seedling bags over two high without supports and spacers.
- ❌ Store pesticides or other chemicals that could harm seedlings in cooler with seedlings.
- ❌ Store non-dormant seedlings.

Non-Refrigerated Storage

Do:

- Plant seedlings **as soon as possible**.
- Protect seedlings from direct sunlight and temperature extremes.
- Allow space for air circulation between seedling bags.

Don't:

- ✘ Allow seedlings to freeze.
- ✘ Plant seedlings that have been frozen.
- ✘ Allow inside bag temperatures to get above 50°F.

Field Handling and Planting Guidelines**Do:**

- [Plant by double dibble method \(Click to Refer to pictures\).](#)
- Protect seedling bags from exposure to wind, sun, and temperature extremes.
- Store seedling bags in shade or under reflective tarp.
- Keep seedling root exposure to an absolute minimum.
- Open only one bag of seedlings at a time.
- Remove only one seedling at a time for planting.
- Transfer trees from seedling bags hand planter bags quickly.
- Cull inferior seedlings.
- Plant when there is good soil moisture.
- Train all personnel before allowing them to plant.
- Closely supervise the planting crew. (One foreman should supervise no more than 12 planters).
- Replace planters who do not meet quality standards.
- Remove one seedling at a time from planting bags.
- Plant trees at the same depth they grew at the nursery or slightly deeper.
- Pack the soil firmly around each seedling (don't leave air pockets).
- Plant trees straight as possible and practical.
- Maintain target tree spacing.

Don't:

- ✘ Leave seedling bags open or seedlings exposed.
- ✘ Expose seedling roots to the elements.
- ✘ Allow seedling roots to dry out.
- ✘ Cull the seedlings before planting.
- ✘ Hit or vigorously shake roots to remove soil.
- ✘ Store planting bags close to a fire.
- ✘ Plant in unusually dry or hot conditions.
- ✘ Allow planting foreman to plant (the foreman should only supervise).
- ✘ Remove seedling from planting bag before planting hole has been made.
- ✘ Allow planted trees to have "L" or "J" roots (survival and growth would be sacrificed).
- ✘ Plant when soil is frozen.
- ✘ Plant when soil is oversaturated with water.
- ✘ Let tree lean greater than 10% upon planting.

Classification for Weather Conditions

Day Classification	Weather Conditions	
<p>Best Plan to do most of the planting during these days.</p>	<p>Temperature: Relative Humidity: Wind: Available Soil Water:</p>	<p>33-75F 50% + Less than 10 mph 75% to Field Capacity</p>
<p>Marginal Take extra careful precautions if planting on these days.</p>	<p>Temperature: Relative Humidity: Wind: Available Soil Water:</p>	<p>76-85F 30%-50% 10-15 mph 50%-75%</p>
<p>Critical Do not plant on these days.</p>	<p>Temperature: Relative Humidity: Wind: Available Soil Water:</p>	<p>Less than 32F or above 85F 30% or less 15 + mph Less than 50%</p>

Note: Day classification should drop to that of the weather condition with the poorest rating.