

Introduction

Stock handling is the handling of seedlings from the time they are pulled at the nursery to the time they are planted. Your stock handling responsibility starts with the arrival of those trees to your planting operation, and continues until you plant them.

- The purpose of this module is to give you the knowledge to correctly handle stock in a variety of situations. These include:
- Handling boxes of trees as they are being moved from one place to another
- Storing trees so that they are kept at the correct temperature
- Managing trees as you load them into your bags, carry, and plant them

Seedling Type Lingo

Species

There are many different species of trees that are planted across Canada. These include spruce, pine, hemlock, cedar and fir. At Next Generation Reforestation, we typically plant spruce and pine.

Container Stock/Plug

The size and shape of the seedlings' roots is largely determined by how it was grown in the nursery. Container stock or "plugs" are the most common.

Bare Root/PBR

Bare root stock is typically planted during the early spring season. They are often a little more difficult to plant because the root structure is less contained.



Handling Boxes of Seedlings

Stock handling guidelines have been developed by taking into account:

- The biological needs of the seedlings.
- The operational constraints of treeplanting.

Minimizing seedling damage and stress are key components to ensuring seedling survival and early growth.

Storing in Vehicles

Tree boxes will be stored in vehicles for as short a time possible; no longer than 3 hours or as the client requires.

Don't Drop, Avoid Jarring

Hard impacts can shock a tree causing it to experience slow initial growth. When you are asked to help unload transport trucks or pickup trucks, avoid dropping the boxes or sliding them into one-another. Combined with the many other challenges of beginning a new life in the forest, this added stress is very damaging.

Do not throw or drop cartons, or lay on their side.

Cache Storage

Spring Trees

Spring trees have recently been thawed and are still in a state of hibernation. To avoid seedling damage, observe the following when setting up or maintaining your cache:

- Keep boxes shut to retain moisture.
- Store boxes under a reflective tarp, in the shade, or under logs or brush—never out in the open without protection.

SPRING TREES
Keep boxes closed and under a Silvicool tarp.

Summer Trees

Summer trees are actively growing and have special storage requirements.

Follow these tips for managing your cache:

- Open boxes to provide air circulation and prevent heat build-up.
- Cover boxes with an elevated tarp that keeps out direct sunlight but promotes airflow.
- Create space for airflow in-between boxes.
- Place seedlings upright if packaged horizontally.

SUMMER TREES
Open boxes and cover with a suspended Silvicool tarp.

If you are unsure which type of trees you are planting (spring or summer) ask your supervisor.

Handling Boxes of Seedlings

Cache Storage (continued)

Building Caches

- Silvicool tarps should be placed over boxes to protect them from the sun and heat.
- Silvicool tarps should be either entirely suspended or elevated at one end. Some degree of air flow is important.
- The classic "A Frame" cache involves the use of a stick or pole to hold the centre of one side of the tarp suspended.. The remaining sides of the tarp are weighted with logs or rocks.

Loading and Carrying Seedlings

Planting Bags

Silvacool Inserts

Reflective inserts are commonly used in planting bags to help keep seedlings cool. With the exception of the draw bag, they must be kept closed at the top when full of trees.



Bag Condition

Keep planting bags in good condition—holes and tears will allow drying of the seedling roots.

Providing Moisture and Humidity

A moist layer of peat moss or a sponge in the bottom of each bag will help keep the roots moist and in a humid environment until they are planted.

This is especially important when:

- Planting summer trees
- Weather is hot and dry
- Roots are dry

Unwrapping Bundles

Trees are wrapped into bundles before they are packaged in boxes. The wrappers are designed to keep moisture inside the root mass and protect the roots from damage during handling. When loading your planting bags unwrap only a few bundles at a time.

Dealing with Problem Trees

Frozen Trees

During the spring planting season, many of the trees will have been thawed only very recently. At times, you will be supplied with trees that are still partially frozen. This can cause a problem because you have to separate the trees from one another before you plant them. If you are dealing with frozen trees, consider the following:

- Use boxes that are the least frozen.
- Swap frozen bundles for thawed bundles.

Loading and Carrying Seedlings

(continued)

Dealing with Problem Trees

- Do not rip apart frozen trees! This is very damaging to roots.
- Let the frozen trees thaw slowly. Do not put them in the sun to accelerate thawing.
- If you have lots of frozen trees, tell your supervisor.

Wet Trees

Sometimes seedlings are wet which can cause them to be very heavy. Don't squash the roots to wring out the water. This causes significant root damage and deprives the seedling of a critical water supply.

Roots Grown Together

Summer trees are actively growing inside the boxes. At times, the roots can grow together inside the bundles. When separating these intertwined trees, be careful not to damage the roots. Damaged roots are very stressful to the tree and create an entry point for disease.

If tree damage seems inevitable, ask your supervisor what should be done with unplantable trees.

Positioning of Trees in Planting Bags

Although most treeplanting bags have 3 pouches, typically only two of them are used to carry trees. On your planting hand side you will have mostly unwrapped bundles. These trees should be standing up. On your shovel hand side, you will be carrying wrapped bundles. If the trees are short, it may be possible to lay them down in the storage pouch (provided that the tops are not bent).

Be careful to position trees so that they are not bent or otherwise stressed inside your planting bags.

Planting Bag Capacity

Overloading your bags will cause unnecessary seedling stress and increase the potential for seedling damage. Save the trees and your own energy by not overloading your bags.

Handling While Planting

Seedlings should only be taken out of the bag one at a time. Having two or three trees in your hand at one time is bad for the tree and your own efficiency.

Taking a Break

During breaks, planting bags should to be placed in the shade to prevent excessive heat build-up.

Stock Inspections

Supervisory staff will from time-to-time conduct inspections of caches and treeplanting bags. Having an understanding of what they will be looking for will help you keep us all in compliance.

Monitoring Seedlings at Caches

- Tree runners, foremen, and treeplanters are all responsible for maintaining suitable seedling storage conditions.
- Treeplanters who notice that trees are warm or dry should report this condition to a member of the supervisory staff.
- Tree runners and foremen are to regularly stop in and check seedling condition when temperatures are hot and/or dry. Any identified deficiencies are to be reported to the supervisor and corrected promptly.
- Roots should be kept moist at all times (water as needed)
- Report any sightings of mould.

Type of Seedling Storage	Temperature Requirement
Reefer	1-5°C
Main Cache	≤ 10°C
One-Two Day Cache	≤ 10°C
Planter Cache	≤ 12°C
Planting Bag	≤ 12°C

When checking planter bags

- Moist packing material (i.e. moss or sponge) should be in all buckets that contain seedlings.
- Only a few bundles should be opened at any given time.
- Silvicool sacks must be used in all buckets carrying seedlings.
- Only “draw” bags should be open, all others kept shut
- Planters should be bagging up after their breaks, or putting their bags under the Silvicool tarp.

Conclusion

Tree seedlings are delicate. You can negatively influence seedling success by:

- Bumping and jarring
- Rough handling that causes damage to the tree
- Overheating and drying out

The whole process of planting is stressful on trees. This stress is cumulative—one instance builds on the next—and can lead to seedling death. Correct stock handling will minimize this stress and contribute to a healthy forest.