

TREE PLANTING GUIDE

Reforestation on private lands in Front Range burn areas



BIG THOMPSON
WATERSHED COALITION



TREES, WATER & PEOPLE
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About this guide

This guide is intended for use by landowners who would like to plant trees on private property that has been affected by wildfire within the Front Range of Colorado. This guide summarizes best planting practices intended to help trees adapt to hot, dry out planting conditions.

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Introduction

Reforestation is the process of establishing new trees on a previously forested site following fire or flood. Within the Poudre and Big Thompson watersheds, a coalition of local environmental non-profits are partnering to reforest areas of the High Park and Cameron Peak burn areas using up-to-date science to inform our efforts and monitoring to refine our approach over time. For more info visit www.poudrewatershed.org/reforestation or email Cory Dick, Watershed Project Manager, at cory@poudrewatershed.org

“Scientists and land managers observing after-effects of wildfires like the Cameron Peak Fire fear that iconic ponderosa pine forests, which are adapted to relatively frequent, low-to mixed-severity burning, may not regenerate in the extensive, treeless patches often left by high-severity fire.”

- Rocky Mountain Research Station, 2021

Climate-Smart Planting

With a focus on planting trees best adapted to the current climatic conditions, The Nature Conservancy is helping our group target climatically-suitable areas where trees are expected to survive under current and future climate scenarios.



Tree Handling & Care

Storage before and at the planting site

- At the planting site, store seedlings in the shade, and water frequently to avoid desiccation.
- Do not alter the trees - no root or top pruning



Seedlings are shaded by a tarp at a planting site in the Cameron Peak burn area.

Tools & Equipment

- Planting tools - we recommend the Jim-Gem® KBC Bar (2nd from left in the photo). It is also possible to use a garden hand trowel if you do not have access to these tools.
- Gloves
- Hard hats (recommended when working in a burn area)
- Heavy canvas bag for transporting seedlings at the planting site



Four common tree-planting tools from left to right: Hoedad, KBC planting bar, sharpshooter spade, and dibble bar.

Where to Plant Trees

- **Plant seedlings on the north or east side of a shade object such as stumps, rocks and logs to protect seedling from the afternoon sun.** Although it is beneficial to shade the entire crown of the seedling, the most critical area needing shade is the ground line. Do not transport objects to provide shade because they may roll down onto the planted tree.
- **Trees should be planted in a spot free of competing vegetation.** Remove all competing vegetation within an area of 12 inches in diameter around the planting site.
- **Trees should be planted in a hole deep enough to accommodate the fully extended tree roots.** They should not be placed in rotten logs, duff or mixes of organic matter, or soil that easily dries out. The hole must be large enough in all dimensions so that seedling roots may be inserted without becoming deformed or damaged (i.e. no "J roots").
- Consider planting Ponderosa pine to achieve the **average density of 130 to 150 trees per acre** with spacing of 10-20 feet between seedlings.



Seek to plant seedlings on the north or east side of stationary shade/nurse objects.



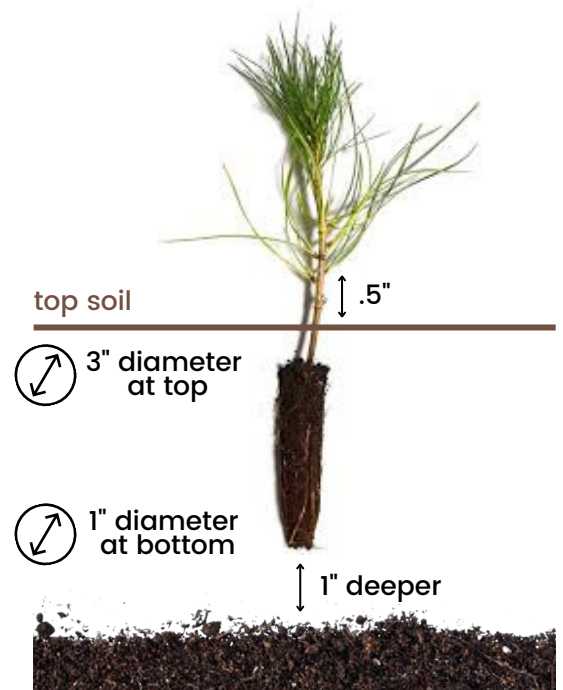
Plant trees close to nurse objects, like downed logs, and in a spot free of surface debris and competing vegetation.

- Remember that Douglas fir often seed into burn scars and prefer shady, wet conditions. They might be planted years later, after the site has greater shade cover.
- We are trying to plant trees in small "tree islands" with ample space between islands. We think this may build resilience into the future forest structure, in case of wildfire, ensuring that there is not a continuous, connected, stand of trees.
- Take precaution to keep roots moist during planting operations.
- Plant trees in the spring, after snow melts (mid-April-May), or in the fall.

How to Plant Trees

- Use care when removing tree from container. Squeeze the sides to loosen the soil and gently pull seedling out.
- Minimum hole size is (i) one inch deeper than the length of the seedling, and (ii) at least 3 inches in diameter at the top of the hole and 1 inch at the bottom of the hole.
- The roots should be planted straight down, and the tree buried to within $\frac{1}{2}$ inch of the bottom needles. The tree will die if the top of the root is exposed to air or if the needles are buried.
- Tap the soil tightly around the trees, ensuring there are no air pockets.
- Watering may help the tree survive its first couple of years. For large-scale planting, watering may not be feasible, so you should focus on good planting techniques and appropriate use of shade objects.

Minimum hole size for tree seedling



Use of a Dibble/Planting Bar

- Insert the bar into the soil until it is approximately as deep as the seedling's root is long. Open the hole by rocking the bar forward and backward, but take care not to make the hole too wide at the bottom, as this will create an air pocket that will allow the roots to dry out.
- Insert the seedling into the hole and pack the soil tightly around the seedling to prevent the formation of air pockets.
- Finally, insert the bar a few inches behind the planted seedling at an angle, taking care not to hit the planted seedling or its roots, and push the soil in from behind the seedling to collapse any remaining air pockets around the seedling.



Purchasing Seedlings



Seedlings ready for pick up at the Colorado State Forest Service Nursery.

- For best survival rates, we recommend using locally sourced seed that is matched to the elevation you are planting.
- For example, seedlings should be grown from seed collected within 500' elevation of the planting location, and from the general geographic area of the planting location.
- **Colorado State Forest Service Nursery**
 - www.csfs.colostate.edu/seedling-tree-nursery
 - (970) 491-8429
 - 3843 W Laporte Ave, Bldg 1060, Fort Collins, CO 80521
- **Brinkman Tree Nursery**
 - josh.stolz@brinkmanre.com

Types of Trees

Focus on selecting tree species that are unable to recover post-fire on your property, which may include ponderosa pine and, in later years, Douglas fir. Often times, lodgepole pine recovers naturally from seeds and doesn't need to be re-planted. However, if your forest was impacted and killed by mountain pine beetle prior to fire, then carefully look at your property and check for natural recovery.

Monitoring

Please help us with long-term monitoring! If you have completed a large planting in the Poudre or Big Thompson Watersheds, please share your general planting specs (location, seedling source, labor source, # trees) with our collaborative reforestation group.

Email your info to Cory Dick, Watershed Project Manager, at cory@poudrewatershed.org.