Planting Seedling Trees after Wildfire

The Colorado State Forest Service has a seedling tree nursery where forest landowners can replant trees and shrubs on their property at a nominal cost. <http://csfs.colostate.edu/pages/buying-trees.html>

Fires have affected large acreages and killed many trees in Colorado’s forests over the last decade. This has left many landowners wanting to replant these black, skeleton landscapes.

Many predict that high fuel loads, beetle outbreaks, prolonged droughts, and higher temperatures will continue to cause large, intense wildfires.

It took a century or more to realize the mature forests we currently have. Trees grew slowly and, over time, the beautiful forests became a large part of ‘Cool, Colorful, Colorado.’ It is going to take time for burnt forests to regenerate, even with your help.

Planting after a fire in a rural area is different than planting a shade tree in a landscape setting in your yard. It seems simple enough: choose a small evergreen or aspen seedling (1 – 3 years old), dig a hole and plant it. But there are several important steps you should take when selecting, receiving, handling, planting, and caring for seedling trees.

Pre Planting Considerations

**Timing**

In Colorado trees are usually planted in spring (April – mid May) or sometimes in the fall (late September – October), depending on elevation. Drought can be common throughout Colorado. The best time to plant may depend on your elevation. For example, along Colorado’s Front Range, late spring rains are usually more predictable than late fall or early winter snows. So, in that area, it is better to plant in the spring.

**Tools**

Colorado has a wide variety of soil types. Many forest areas are rocky and hard to dig in. Several types of planting tools can be used, the most common being a garden shovel. However, a firefighting tool called a Pulaski, which is a combination hoe-dad/ax, is very useful for digging holes to plant seedling trees. Another useful tool is a narrow shovel called a tile spade (aka, sharp-shooter). An auger can be used but is usually more than what is required for planting seedling-size trees.

**Where to Plant & How Many Seedlings**

Where should you plant first? When looking at a large acreage to plant, it can seem like a daunting task. Be sure that the number you plant is manageable. Look at the areas of your property that were most severely burnt and at steeper slopes. These areas have the highest erosion potential, so should be given first priority. Plant on cooler, moister north and east facing slopes (aspect) first. Rather than plant the entire burned area, spread your investment out into multiple plantings over a few years.

However, before planting seedlings, erosion control measures should be taken. For example, dead trees should be cut and place flush with the ground along the contour. Native, weed-free grass seed should be raked in to the soil and mulch should be scattered on the scorched forest floor. Be aware that many weeds, i.e. mullein, will quickly pop up along burnt landscapes. You will want to be ready with weed control measures such as mowing, pulling, and spot herbicide application.

Under most circumstances, it is not feasible to reforest large acreages entirely in a given year. Full stocking for a mature, front-range Ponderosa forest is approximately 300 trees/acre (12’ X 12’ spacing). Considerations should not only be based on time and labor, but also on how much care you can give after planting. Rather than sticking to a standard spacing, plant seedlings based at strategic and optimum locations. Plant seedlings in the shade of stumps (do not leave high stumps), shrubs, rocks, or other existing landscape features. These strategic spots can increase your survival rate. Also, digging can be a little easier in these locations, especially since the mountainous terrain of Colorado can be very rocky.

**Seedling Selection**

Choose tree species that are suitable for your elevation, soil, aspect, and geographic location. You will want plant species that are hardy and drought tolerant, usually the same native species that were naturally growing there before the fire.

There are two types of seedlings: potted (container grown) and bare-root. Both require proper handling and storage. Containerized have a soil plug surrounding the root system and are in tubes or trays. Bare-root plants do not have any soil protecting the roots but are stored and transported with wet sawdust protecting the root system. Potted seedlings generally cost more, but tend to have a lower mortality rate since there is protective soil around their root system.

**Planting**

**Handling, Storage, and Planting**

Most times when you pick up your seedlings, you will not have to bring a large truck or trailer. Remember, seedling trees are small – usually less than three years old and less than 2’ total height (root & top). You do not want to keep seedling trees in a hot enclosed car for too long (more than 3 hours). When you get them home, it is always a good idea to give them a drink of water, just in case.

If you are not going to plant them right away, store seedling in a cool but well ventilated area – like on the north side of a building. You will want to plant your seedlings within a week to ten days from when you pick them up.

Plant bare-root trees first. It’s a good idea to put bare-root seedlings in a bucket of water or mud slurry while you are planting them. However, do NOT keep them in a bucket of water overnight. If you are done for the day and you have some bare root plant left over, either wrap them back up in their wet sawdust & plastic or dig a furrow and cover the roots with soil.

To plant potted seedlings, be sure to first gently remove the plant from the tube or tray. Plant the seedling to the top of the soil medium. You do not have to rake the sides of the plug to unbind the roots like you do with larger containerized plants.

Plant bare-root seedlings to the root collar, which is the slightly swelled area above the roots, but below the foliage or buds.

It is always better to have your holes dug before you begin taking the seedlings out of their container or wrapping.

Add soil amendments or fertilizer to the backfill sparingly. Too much nitrogen (i.e. lawn fertilizers) will tend to burn new shoots and roots. This will slow growth and delay establishment. If compost is used, do not use more than 20 percent with native soil. Remember, the tree is going to have to get use to the soil medium with which it will probably spend the rest of its life. Root stimulators can help, but be sure to follow application directions. Polymers perform best as a root dip for bare-root seedlings.

Once planted, give them a thorough watering, if possible.

Maintenance

Two frequently asked questions are: How much/often should you water? How long before the plant becomes established? The establishment period for a seedling tree is usually 3 to 5 years. After that, trees will need less supplemental watering. The two most important considerations in taking care of your planted seedlings are water and mulch.

**Watering**

Watering requirements depend on how much rain/snow has occurred. One of the best gauges for measuring soil moisture is your hand. Check by digging the soil near the plant and see if it is cool or moist. Water at a rate of 1 – 2 gallons per seedling, once a week in the absence of precipitation or mulch. If watering is not possible, proper placement becomes more critical, using features like logs and rocks to help shade seedlings.

**Mulch**

If mulch is applied (natural or synthetic), watering frequency can be once every 2 – 3 weeks. This would help control weed competition and retain moisture in the soil longer. Natural mulches include: wood or bark chips, straw, and aged sawdust. Mulch at least a two foot perimeter on the soil surface around each planted seedling with an inch or two of organic material such as wood chips, bark, needles, clean/dry hay or aged sawdust. If you use synthetic fabric, such as weed barrier, use three foot squares with the seedling in the middle. Cover the edges and/or use landscape staples to keep it from blowing away.

Periodically check you seedlings for stresses such as insect or disease damage, browsing, and rodent injury. Fencing with chicken wire or rabbit guards are usually more of a deterrent than commercial or homemade sprays (i.e. cayenne pepper & water).

Common Causes of Seedling Mortality

It is not uncommon for many newly planted seedlings to die in the first year, due in part to the dramatic change in growing conditions after transplant. Survival can be improved if you are aware of the most common reasons they die:

* Improper handling/storage before planting (i.e. roots exposed to air)
* Competing weeds/vegetation
* Lack of available water/moisture
* Seedlings planted too shallow or too deep
* Insect/disease
* Rodents/browsing
* Herbicide drift

For More Information

If you have any questions or concerns about planting seedling trees, please contact your local CSFS District Office. Contact information is available at <http://csfs.colostate.edu>.

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