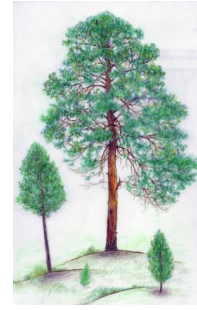


Bruce Benninghoff
Forestry Consultant
Benninghoff & Company
7109 W. Frost Dr., Littleton, Colorado 80128
303-978-1284; email - bruce@frontrangeforestry.com
Website; www.frontrangeforestry.com



Start Your New Seedlings From Your Own Seed

I have personally used this method to start ponderosa and Douglas fir seedlings in my yard.

Collecting Seed

You want to collect green cones from your trees as soon as the seeds within them are ripe. The easiest way to know when they are ripe is to watch the squirrels. The squirrels will perform gustatorial assessments on sample cones starting about August 10. They will not start cutting and storing cones in earnest until the seeds are ripe. Typically this will be about August 15.

If you want seed from phenotypically superior trees collect the cones as the squirrels cut and drop them from the chosen trees. If you want the full range of variability from all the genotypes in the forest, 'borrow' cones from the squirrel caches. Or collect your own from trees that are short enough to have cones within reach using a pruning pole.

Storing the Cones

Place no more than 3" of cones in the bottom of a brown (Kraft paper) paper shopping bag. Label it as to collection site, species, and date. Don't mix species in a given bag. Staple it shut at the top. Do not roll the top down more than 4". There should be a lot of air in the bag and exposed surface for gas exchange.

Hang the bag in an unheated shed where it will remain dry and the temperatures will fluctuate. It must be in a place where the squirrels or other rodents can't reclaim them.

Extracting Seed

The following spring, the cones will have opened up during the winter storage. Take the bag down, and shake it vigorously. The seeds will fall out from between the cone scales. Open the bag. Pick the cones out and throw them away. The seed you are after is laying in the bottom of the bag.

Planting the Seed

Theoretically you can plant the seed in containers or directly in the ground. My experience was that putting them directly into the ground was far more successful. When I tried to use containers a fungus called damping-off fungus killed them about 10 to 14 days after germination. It may have been that the containers kept the roots too wet, or the fungus may have come from the potting soil. I suffered very little mortality when I put the seed directly in the soil with no amendments.

You can plant the seed directly where you want the new tree or you can plant it in a bed where it can be watered and protected until it is ready to be transplanted to its final location. If you plant in the final location where it will not be watered, the weather will determine your success. You should expect high mortality and will need to plant more seeds to get the desired number of seedlings. In dry years you may get no seedlings surviving. The procedure will need to be repeated until you luck into a wet summer.

If you are planting in a bed for transplanting later, space the seed out at least a foot apart. You want no competing vegetation around the spot. Put the seed between ¼ to ½” into the soil. Avoid soil with clay. Avoid soil that is just coarse sand.

Watering will produce more consistent results than relying on natural precipitation. The soil must be kept damp to stimulate germination. The first few days after germination are critical. The soil can not be allowed to dry out before the root gets started. After the first week, watering should be less frequent. After the first month, the soil should be allowed to get drier between watering. Water just enough to keep the seedling from drooping. Too much water will invite fungus. Shade should only be necessary if the temperature gets above ~90°F.

Transplanting

Ideally, seedlings should be transplanted after two or three growing seasons. If they are allowed to get too large, the ratio of the foliage to the root ball that you can deal with manually, gets too high. The foliage will pump out more moisture than the root ball can deliver.

Transplanting should be done as early as possible in the spring. This is less critical if supplemental water can be applied in the new location. The amount of water will depend on the soil texture and how closely the ball fits in the new hole. Berms can be built up on the downhill side of the planting site to capture rainfall and irrigation water where it can sink into the loose soil at the margin of the root ball.

Examples of Recent Natural Regeneration



Jefferson County, 7,500'. These seedlings are defying all odds by growing on a root wad that would be expected to dry out too rapidly to support seedlings.



Natural regeneration on road cut in full sun on west aspect in Douglas County at 7,200'. The road was built in 2004.





Natural regeneration in opening in Douglas County at 7,400'. The area is grazed by horses and cattle.



This seedling is starting its second growing season.

Natural regeneration after mastication of ponderosa with heavy dwarf mistletoe infection in Douglas County at 7,100'.



Ponderosa regeneration in small opening between mature ponderosa and Gambel oak in Douglas County at 7,400'. This is the smallest opening that can be expected to allow seedling development.



Ponderosa will rarely regenerate well under a dense canopy. It will regenerate in openings close to the taller timber where the seed can find sunlight and no direct competition for soil moisture.



Five year old seedlings in my yard at 5,600', grown from seed collected in nearby forest.

These received supplemental watering and fertilizer.

Three of these were successfully transplanted as a bunch with significant difficulty.

In the 2012 growing season one tree grew 17", others did 15".

There were originally more than 30 seedlings in this spot because nearly every seed germinated and grew successfully. I am still thinning them out.



This little Douglas fir was planted at same time as the ponderosa. It is busy growing a root system while enjoying the shade of the pines.

As my mother told me – “Even the mighty oak was once a nut like you!”