



How to Grow a Redwood Tree from Seed

The range of coast redwood trees (*Sequoia sempervirens*) extends from Southern Oregon to Central California. As the name implies, they grow close to the coast, never growing naturally more than 50 miles inland. The trees depend on the coastal climate; they thrive in moderate conditions and need the protection of fog to survive the dry summers of this area. The trees grow close together, and little light reaches the understory where the young seedlings grow. To grow healthy redwoods it is best to create conditions that are similar to the forest understory where redwood seedlings would naturally grow.

Due to overharvesting, only 5% of the original old-growth coast redwood trees remain. By planting 10,000 redwoods in Northern California that are grown and cared for by volunteers in our native plant nursery, Turtle Island Restoration Network's program, the Salmon Protection And Watershed Network (SPAWN), is restoring ancient redwood forests and taking action on climate change.

If you have any questions about growing your redwood seedlings, please contact your local native plant nursery or Audrey Fusco, native plant nursery manager at Turtle Island Restoration Network, at audrey@seaturtles.org.

1) Collecting Seeds

Redwood trees flower during December and January, and the blooms produce cones the following fall. In Marin County the cones typically begin to fall during rainy periods in November or early December. Redwood cones are about an inch long and the seeds are very small, about the size of a tomato seed.

To collect redwood cones, go to an area that contains mature redwoods after a rainstorm. Take buckets along for collection. The most viable seeds are the ones that are still in the cones, and November and December are the best months to collect seed. Each cone can hold up to 100 seeds!

2) Stratifying Seeds

When you return to the area where the seeds will be processed, place the entire cones and all seeds into a 1 or 2 gallon Ziplock bag along with perlite in an approximately 1:2 seed to perlite ratio. Stratify the seeds with coconut coir or perlite in a 1:2 ratio. We prefer using coir for stratification of individual seeds because the coir mixes easily in with the soil blend. We place the cones/perlite or seeds/coir mix into a refrigerator for 20 days. The perlite should be kept at a level of dampness similar to a wrung-out sponge. Seal the bag and check it occasionally for moisture. Mist the perlite with water if it begins to dry out.

3) Planting Seeds

The seeds are ready for sowing following the stratification process. SPAWN nursery uses various containers for seeding and we have found that the easiest way for us to grow redwoods is to seed into a 6" deep flat. These deep flats allow the seeds that germinate to grow long roots before being transplanted. The soil medium that SPAWN nursery is using is a ratio of 50% organic nutrient-rich topsoil, 25% perlite, 20% coconut coir, 2% compost, 1% redwood duff, 1% Down-to-Earth acid fertilizer mix, and 1% mycorrhizal and/or fertilizer mix (such as Supreme Grower's Soil Blast and/or kelp powder). Adding perlite to soil promotes drainage, and coir holds moisture like a sponge and keeps the soil medium moist. We recommend seeding into a similar soil mix; the critical components of the soil blend are that the soil holds moisture but is well-draining, is slightly acidic (PH of 5.5 to 6.5), and is nutrient rich.

After taking the bags of cones out of stratification you must twist the cones to open them and take out the seeds. Each cone contains 80 or more seeds. Fill your flat or pot with the soil mix and leave at least ½" space at the top of the flat or pot. Sprinkle the seeds across the surface of the soil. Ideally, sow about 12 seeds for every 3 square-inches of surface. Seeding at this density is necessary because redwood seeds have a low germination rate. Although each mature tree can produce up to 100,000 seeds per year, only approximately 1 in 12 seeds are viable. Cover the top of the seeds with a light dusting of soil, approximately ⅛" to ¼" thick, then add a thin layer of perlite to cover the surface of the entire flat or pot. The addition of perlite to the surface prevents "dampening off," which is a term used for rotting.

4) Germinating Seeds

After planting the seeds make sure the seed trays are placed in an area that receives sunlight, as redwood seeds need light to germinate. Keep the soil medium moist at all times, but not soaking wet, as too much moisture can weaken the seedlings and make them more susceptible to infection. Ideally, the seeds should be placed in a greenhouse or protected in some way so that they are not exposed to temperatures below 45 degrees Fahrenheit. The ideal temperature for germination is 67 degrees Fahrenheit. Germination should occur within one month. Seeds may take extra time to germinate if the winter is especially long and damp. Once germination has occurred, the ideal temperature range for the seedlings is between 45 and 70 degrees Fahrenheit. Be sure that the seedling is kept in a shaded area during the warm spring and summer months.

5) Transplanting Seedlings

Approximately three months after germination, the seedlings will need to be checked to see if they are ready to be transplanted from flats into short tree pots or deepots so that their roots can continue to grow longer. If the seeds were sowed directly into deepots, they can stay in the pot for four to six months, but will eventually need to be transplanted to ensure that each pot has only one seedling.

Check to see if the seedlings need to be transplanted from their flat by using a metal spoon to carefully dig out a seedling along with the soil attached to the roots out of the container. See if the root is reaching the bottom of the container. If so, it needs to be transplanted into a larger pot. If seeds were sown into dee-pots or 1 gallon containers check the root system by tapping the whole plant/soil mix out of its pot. When the roots have reached the bottom of the pot—which may take longer than four months—transplant the seedling into a tree pot or other container that allows for long roots to form. While transplanting take care to ensure that the relationship between the soil and the roots is maintained. Be careful to not bury the seedling too deeply into its new pot and do not uncover roots that were covered with soil prior to the transplant.

6) Outplanting

The seedling should be allowed to grow and develop a long root system for two to three years before being planted out into land. When the redwood is ready for planting, be sure to place it in a space that is appropriate for a seedling to develop into a mature tree. Remember that these trees will grow very large, and do not plant them right next to roads, utility poles, or in areas where the large crown or the extensive root system might interfere with the tree's surroundings. After growing the base of its root system, which takes two years following planting in the ground, a healthy redwood will grow around 5 feet each year, and can easily reach 150 feet within a person's lifetime.

Redwoods should generally not be planted in direct sunlight. If they are planted in heavy sun, place mulch, leaf litter or small branches around the seedling to help them survive. Redwood seedlings are susceptible to goring but typically are not eaten by deer. If there are many deer in the area it is important to add a cage to protect the tree while it is young. Also, give the young trees occasional water during the dry season. Around 1 gallon every two to three weeks per seedling should suffice in most conditions. Water trees that are planted in sunny areas more frequently and heavily.

Finally, consider adding some companion plants to areas where young redwoods are growing. Redwoods typically grow in dense forests that include bigleaf maples, tan oaks, and California hazelnuts. Beneath these small trees are understory shrubs and perennial plants such as coffeeberry, wood rose, sword fern, and ground covers such as redwood sorrel, bleeding heart, redwood trillium, and redwood ginger. In sunnier, more exposed areas, redwoods can grow mixed in with smaller trees and shrubs, such as coast live oaks and toyons. By integrating other species with the redwoods a healthy forest ecosystem can develop quickly.