RODALE INSTITUTE™

ORGANIC CONSULTING

CHOKECHERRY SEED PROPAGATION

AGRONOMIC GUIDE

Introduction

This Chokecherry Seed Propagation Guide is designed to assist new and beginning growers, land stewards, and others interested in developing and supporting their relationship with this plant and the lands on which we all grow. As native plant habitats continue to be harmed by extractive and pollutive practices, the decline in their healthy populations calls for propagation methods that support the continuation of and access to these plants. In our changing environment, this guide is a “living” document meant to be enhanced and adapted over time.

This guide is specific to the Lemhi/Salmon River region, Fort Hall Indian Reservation, and greater central Idaho bioregion. To increase accessibility to people from different backgrounds, the propagation methods described are rooted in many ways of knowing, including organic methods and Indigenous knowledge such as the “4 Rs”.

For this guide, the 4 Rs refer to Respect, Responsibility, Reciprocity, and Relationality. These methods provide a standard for humans when working with the land, including chokecherry. The 4 Rs are articulated by and foundational to Indigenous lifeways around the world, including the Shoshone-Bannock Peoples of what is now called southeast Idaho. When these values inspire our interactions with plants, we are better able to nourish ourselves and the land. They are therefore integrated throughout this guide.

Chokecherry (*Prunus virginiana*)

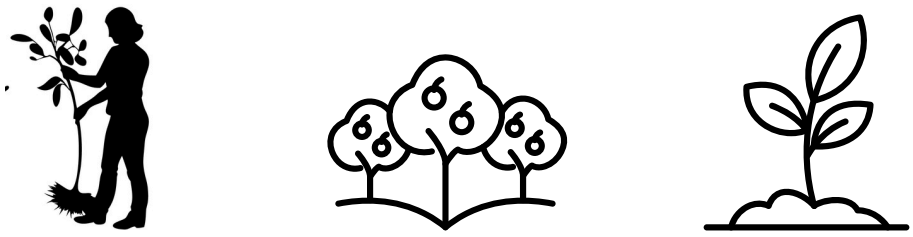
Characteristics:

The chokecherry plant is a densely growing, woody deciduous shrub or small tree native to much of Turtle Island (United States). This perennial grows 10 to 20 feet wide and rarely reaches above 30 feet in height. The fragrant, creamy-white flowers bloom in late spring to early summer, depending on the location, and eventually form red to black berries in the summer. The dense clusters of small flowers form before the glossy, oval-shaped green leaves fully develop. The leaves grow on reddish-brown stems that are connected to a trunk with bark that is gray to reddish brown. The bark has small horizontal markings that allow the tree to "breathe" or facilitate gas exchange. The plant produces red to black fruits containing a large stone or seed in the center. There are different varieties of *P. virginiana* with each reported to have differences in fruit colors and/or leave colors. They can be propagated by seed, cutting, basal sprout, and rhizomes.

Figure 1. The annual lifecycle of a mature chokecherry tree, including the spring buds, flowers, and ripe berries.

Habitat & Ecology:

Different chokecherry varieties are distributed across the country. Common chokecherry, *P. virginiana*, is found throughout Idaho. Chokecherries thrive in moist areas such as riparian zones, draws, and drainages, but they do not tolerate standing water. A variety of soils types and soil textures support chokecherries. Because of this adaptability, chokecherries are a good fruit crop for areas with poor soils. They are associated with willow, aspen, alder, ponderosa pine, and snowberry. The hard wooded plant provides watershed protection and species diversity. Additionally, it is known for providing habitat cover, pollinator and animal food, and soil stabilization.



BACKYARD GARDENS ORCHARDS RESTORATION OPPORTUNITIES

A Provider of Many

The plant's food, medicine, and material are crucial for many. Beyond its invaluable ecological role in ecosystems throughout the west, the shrub is a point within the landscape where tribal communities, foragers, native plant enthusiasts, and restoration ecologists exercise a Relationship to the land. Humans connect with this plant in a variety of ways: planting seeds or saplings; harvesting berries, leaves, or wood; processing the plants' foods and medicines; crafting tools; and, for tribal communities, the exercising of culture. Each form of connection energizes humans' Relationship to the earth.

Be aware: Because of the hydrocyanic acid found throughout the plant, except in the fruit flesh, it is necessary to understand how to process the plant safely for consumption and use. Please seek out additional information to safely harvest, process, and ingest this plant.

ACCESSIBLE PROPAGATION & TRANSPLANTING METHODS

HUMAN CONNECTION TO THE EARTH

POLLINATOR FOOD

HARD WOOD FOR TOOLS

ANIMAL FOOD

JUICE FOR JELLIES, JAMS, AND PUDDINGS

BERRIES FOR CHOKECHERRY CAKES

MEDICINE

Propagation

1. SEED COLLECTION

What to consider prior to collecting:

- **Chokecherries Provide For Many:** Demonstrate Respect by acknowledging how this plant provides invaluable foods, medicines, and structure to vast environments and those who inhabit them.
- **Ethical Harvesting:** Give a moment of gratitude to the plant before Responsibly taking only what you need. Using sustainable harvesting methods, such as only taking 1 out of every 5 berries (20% Rule), you can be sure to leave enough for the birds and the bees.
- **Genetic Diversity:** Reciprocate the plants' many offerings by honoring its need for genetic diversity. For large plantings, this can be done by harvesting your berries from 50 individual plants or more. Sample evenly and randomly across the selected plant population.

What to look for:

- Ripe, juicy berries.
- Tan seeds.
- Healthy plants: full, vibrant leaves, living branches, and evidence of annual growth.
- For large out plantings like restoration projects or orchards, randomly and evenly collect seeds from at least 50 different plants to protect genetic diversity.
- Plants growing in a climate similar to desired planting site: similar elevation, temperature, soils, and moisture regime.

Propagation Continued

2. SEED PROCESSING

Once ripe berries are collected, the flesh of the fruit can be removed and the tan seed can be cleaned prior to drying and storing them.

Remove as much of the fleshy fruit as possible by one of the following methods:

- Rubbing berries on a screen with holes that are small enough to retain the seeds and large enough to let the berry flesh through.
    - Suggestion: a screen from the hardware store with holes that are 2 to 4mm.

- Smashing berries with your hands.
- Blending berries in a blender or food processor, either with a plastic dough blade or with the blades taped or dulled.

Rinse fruit skins and debris off using a hose (while seeds are on a screen) or by soaking the seeds in a bucket for a few days which causes the debris and bad (unviable) seeds to float to the top and the good (viable) seeds to sink to the bottom. Gently pour off the debris and bad seed from the top, leaving good seeds at the bottom of the bucket.

Repeat the rinsing process if needed until little to no fruit remains attached to the seed.

Dry seeds on a screen, tarp, or other hard surface in a cool, well-ventilated space for 1 week or until you no longer feel moisture on all seeds.

Store your seeds in an airtight container in the refrigerator. Seeds can be stored for 5-10 years.

Plan your sowing date depending on when weather conditions are warm enough (See Greenhouse Seed Sowing Versus Outdoor Seed Sowing). You will need approximately 90-120 days to germinate your seeds (See Stratification).

Propagation Continued

3. STRATIFICATION

Stratification is the process of breaking seed dormancy. **Dormancy** is an adaptation to protect seeds from germinating in unsuitable conditions. Stratification aims to mimic the natural conditions of the seed's environment in order to break dormancy for seed germination. Stratification can vary greatly among genotypes of the same species therefore it may be necessary to experiment with different treatments. *Prunus virginiana* typically requires 90-120 days of cold-moist stratification.

How to stratify your seed:

- **Sterilization:** Soak seeds in a 1:3 ratio of water (1 part) to 3% hydrogen peroxide (3 parts) mix for 10 minutes. Sterilization helps prevent microbial contamination that can lead to diseased plants.
- **Imbibition:** To initiate metabolic activities, dried seeds must absorb water. Imbibition refers to the uptake of water by the seed. Soak dry seeds for 48 hours in running water immediately after sterilization.
- **Refrigerator Stratification:** Chokecherry requires approximately 90-120 days of cold and moist conditions to break dormancy. After imbibition, using a small ziplock bag or container, place seed in moist sand, soil, or sawdust. Place it in the refrigerator. Seed collected from areas with shorter winters will likely need less time while seeds with longer winters may need more time.
- Alternatively, take it outdoors for **Outdoor Stratification:** Seed can be naturally stratified outdoors beginning in late fall/early winter. Sow seed in trays filled with growing medium like potting soil and place outside in an area protected from wind. Keep the seed and soil surface moist. Outdoor stratification works best in areas with reliable snow cover to keep seed moist and insulated.

4. GERMINATION

Germination is when the seed begins to sprout and the radicle, or the first root, emerges (Figure 3). Chokecherry seeds do not require light to germinate and the first signs of germination will occur while seeds are in cold stratification. Germination has begun in chokecherries when there is a visible cracking of the seed coat. Check your seeds **weekly** for signs of germination.

CONTAINER RECOMMENDATIONS: FOLLOWING GERMINATION

To avoid water logging soils and root rot, start by sowing seeds in smaller container sizes and over time, size up to meet your desired size for out planting.

A typical container progression for chokecherry trees starts with a roughly 10 cubic inch container during the first full growing season (Figure 2). At the beginning of the second growing season (early spring), size up to a 1-gallon container. Then, size up by ~1 gallon for each subsequent growing season. Containers with a greater length to width ratio will encourage roots to grow long and vertical rather than spiraling around becoming root bound. Use a growing medium such as potting soil.

Figure 2. A progression of potential container sizes. From left to right: 10 cubic inch, tall 1-gallon, tall 2-gallon, and tall 3-gallon.

Sowing Germinated Seeds

Sow germinated seeds when at least 50% of the seeds have signs of germination indicated by visible cracking of the seed coat. Sow chokecherry seed to a depth of 2-3 times the length of the seed or approximately ½ inch. When sowing seed, the radicle should be pointed down into the soil (Figure 3). Keep the top inch of soil moist at all times until a seedling fully emerges.

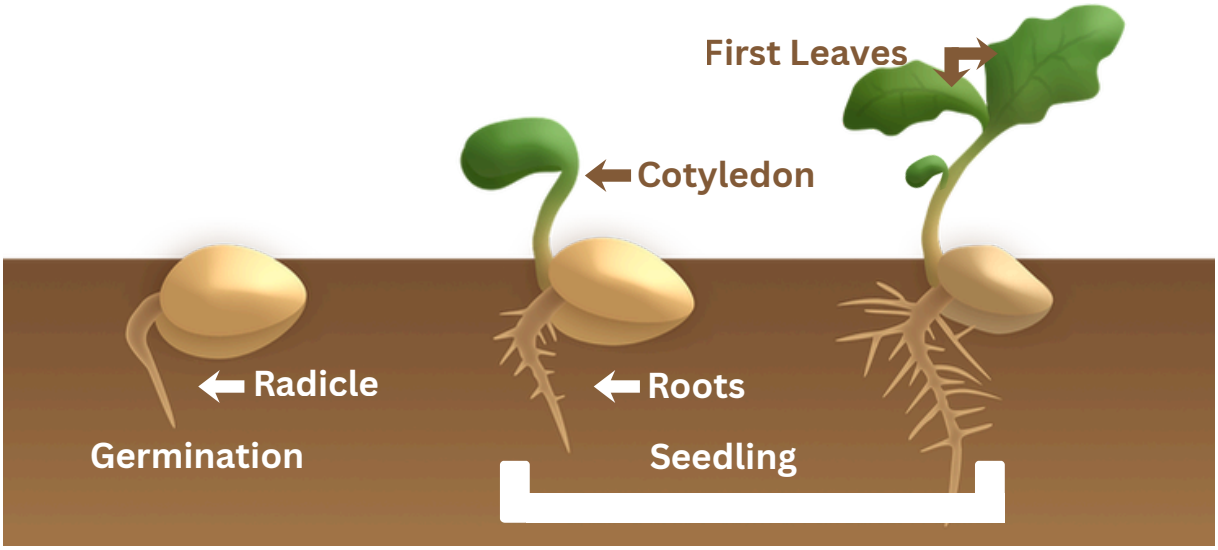


Figure 3. Seed germination process.

SOWING GERMINATED SEEDS OUTSIDE

In an outdoor growing environment, sow germinated seeds after danger of frost has passed in the spring. For most of the Lemhi/Salmon River Region, Fort Hall, and the southeast Idaho bioregion, danger of frost persists through the spring in April and often through the end of May.

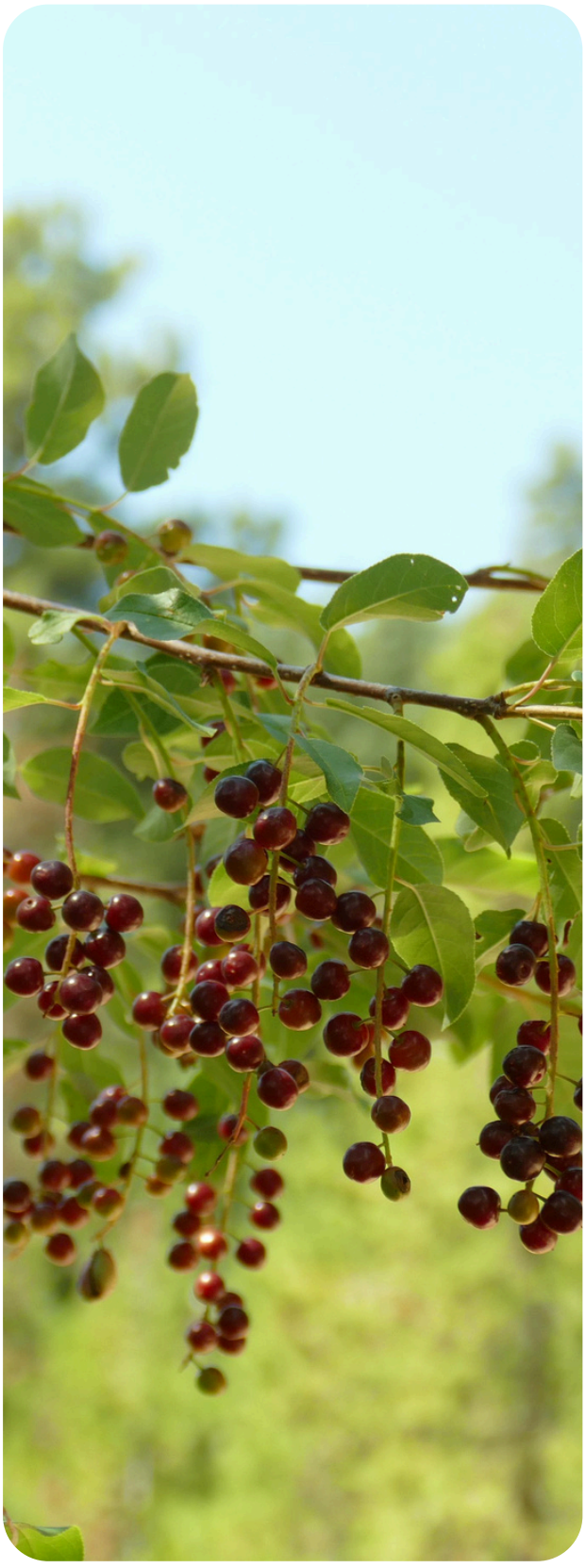
The USDA Plant Hardiness Zone Map can assist with standard regional temperatures: https://planthardiness.ars.usda.gov. In a changing climate, however, local knowledge and observation of temperature ranges are even more important to have.

SOWING GERMINATED SEEDS IN A GREENHOUSE

In a greenhouse, sow seeds when temperatures can be maintained at ~70°F during the day and ~50°F at night. Plants can be moved to an outdoor growing environment after danger of frost has passed.

What Do Plants Need to Thrive?

Adequate sunlight is essential for healthy plant growth. Plants convert sunlight into energy through photosynthesis. Young seedlings with undeveloped roots can be stressed by direct, full sunlight, so avoid direct sunlight until the first true leaves have formed (Figure 3). At this time, plants can be moved into direct sunlight. Start by introducing plants to direct morning sun for a few hours in an area with low wind, then gradually increase sunlight exposure each day until the maximum exposure is reached.



Water wisely! Chokecherries thrive in moist areas such as riparian zones, draws, and drainages, but they do not tolerate standing water. Too much water can be just as harmful as under watering. A well-draining soil mix can help meet this moisture balance for the plant. General tips for watering success are:

- Water every 1-2 days during the active growth phase (less often if receiving rain; more often during extreme heat waves).
- Look for the top 1 cm of soil to be dry before watering.
- Feel the weight of the container when it is fully saturated versus when it is dry. When the container is light, this is a good sign to water.

The need for additional nutrients depends on your growing medium, irrigation water, and beneficial microorganisms which can all supply nutrients to containerized plants. See Table 1 for additional nutrient guidelines.

Transplanting Chokecherry Outdoors

Transplanting young chokecherry is a great way to engage in the tending of Reciprocity and Relationality. This act has the potential to positively impact current and future generations by ensuring the continuation of relationships to this plant, for humans and other-than-humans alike. Before or during transplanting, consider offering these young plants gifts of good luck and tidings, including water, compost, and other words of encouragement.

RECOMMENDATIONS

Chokecherry plants can be transplanted at various phases in their growth. Generally, the more developed the root system is, the better the success rate for out planting. Space plants 5 to 8 feet apart. If planting multiple plants for an orchard, planting north to south can help equalize light distribution and reduce wind.

To avoid stressing your potted plants, transplant them in either 1) the spring when the weather is warming and the soil is workable or 2) in the fall when the weather is cooler and damper, while the soil is still warm enough for the roots to establish.

Dig the hole 3 times the width of the root ball but only as deep as the height of the root ball.

Carefully remove the tree from its container by squeezing the sides to loosen roots and tapping on the top of the container to knock it off; do not try to pull the plant out of the container.

Straighten any roots that are curling at the base. Place the tree in the hole so it is straight. The plant's roots should be completely inside the hole, the top of the "root ball" should be level with or slightly above the ground. Back-fill your hole a little at a time.

Protect young plants from rodents or other animal grazing by using below-ground wire cages or plant guards. Newly-planted areas should be clearly marked to protect them from herbicides, mowing, or other disturbances.

Water your transplants immediately after they are planted into the ground. Follow-up irrigation is dependent upon weather and specific site conditions, but generally plants (even native or drought tolerant) should be deep watered every 7 -10 days (except during natural rain events), for the first year before full establishment is reached. Long, deep watering is best to encourage deep root system development. Drip irrigation is useful (1-.5 gph emitters). Irrigate at the base of plants and avoid overhead irrigation which would encourage weed growth and greater water evaporation. Adding a layer of mulch on top of the surrounding soil surface can help retain moisture.

As plants become established starting in year 2, decrease irrigation frequency. Eventually, depending on the sire, regular irrigation should not be needed by year 3 and only used as a supplement during drought and/or to encourage plant growth or vigor.

Pruning in the late winter or early spring can encourage the plant to grow into a small tree rather than a shrub.

TABLE 1. GENERAL NUTRIENT GUIDELINES

Growth Stage	Biophysical Processes	Nutrient Strategy	Rationale	Organic Fertilizer Options
Germination	Radicle emergence.	No fertilizer required.	Seeds pack all the nutrients required to initiate growth!	
Establishment	Root development and initial leaf development.	No fertilizer is required until after the first true leaves emerge. At this point, very light applications of fertilizers can be applied to kickstart growth, focusing on nitrogen for above-ground growth, phosphorus for root growth, and promote microbial activity.	Germinates are still using nutrients stored in the seed until the first true leaves emerge. At this point, seedlings are still small and delicate and can be easily damaged by excessive salts.	Fish emulsion; Compost tea; Liquid kelp
Active/Rapid Growth	Increase in biomass. Most of the shoot growth occurs during this phase.	Increased levels of nitrogen promotes shoot growth. However, too much can cause excessive shoot growth and a disproportionate root: shoot ratio.	Nitrogen is often a limiting factor during the rapid growth phase.	Slightly increased concentration (from the Establishment Stage) of Fish emulsion
Hardening Off	Shoot growth slows while plants focus on increasing stem diameter, root growth, and stress adaption.	Increase in potassium and decrease in nitrogen.	Potassium plays a key role in a plant's physiological response to stressors like cold temperatures and moisture stress.	Kelp extract

**See USDA Organic Regulations and Organic Materials Review Institute for further information on organic inputs.*

WHY ORGANIC?

Organic growers are required to use practices that protect soil health, water quality, and biodiversity. USDA certified organic agriculture also does not permit the use of synthetic chemical pesticides, synthetic fertilizers, or genetically modified organisms. This combination of practices reduces the risks of human, animal, and environmental exposure to potentially toxic materials, can reduce greenhouse gas emissions soil erosion, and can promote wildlife habitat and diversity.

AN ORGANIC CERTIFIED PRODUCT MEANS

All production activities are accomplished according to USDA organic standards. No substances prohibited by the USDA National Organic Program are applied for at least three years immediately preceding harvest. All production systems are managed using practices that preserve ecological balance and biodiversity.

Acknowledgements

Thank you to Amy Kramer from Serviceberry Nursery (Salmon, ID) and Jessica McAleese from Swift River Farm (Salmon, ID) for shaping this guide with their knowledge and thoughtfulness. This guide was funded by the Northwest Transition to Organic Partnership from the US Department of Agriculture.

References

Geyer, W. A., Broyles, P. J., & Row, J. M. "CHOKECHERRY: Prunus virginiana L." Plant Fact Sheet. USDA. Accessed November 1, 2025.

Johnson, K. A. 2000. Prunus virginiana. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed November 1, 2025. Available: https://www.fs.usda.gov /database/feis/plants/tree/pruvir/all.html

Kesh, H. (2018). *Seed dormancy: Types, causes, and its breakdown.* Journal of Agriculture and Biological Sciences, 10(4), 45–52. Available online at: www.indianfarmer.net

Lee, S. Y., Lee, S. Y., & Kim, Y. J. (2025). Seed Dormancy Class and Germination Characteristics of Prunus maackii and P. virginiana. *HortTechnology*, 35(5), 834–842. https://doi.org/10.21273/HORTTECH05709-25

Rosner, S. & Morris, H. "Breathing life into trees: the physiological and biomechanical functions of lenticels", IAWA Journal 43, 3 (2022): 234-262, doi: https://doi.org/10.1163/22941932-bja10090

Wiser, S., Maughan, T., & Black, B. "How to Grow Chokecherry in Your Garden." Extension Yard and Garden. Utah State. 2014. https://extension.usu.edu/yardandgarden/research/chokecherry-in-the-garden

United States Department of Agriculture
Agricultural Marketing Service
National Organic Program
Transition to Organic Partnership Program

USDA ORGANIC

NORTHWEST TRANSITION TO ORGANIC PARTNERSHIP PROGRAM

This work is supported through the United States Department of Agriculture (USDA) Transition to Organic Partnership Program (TOPP). TOPP is a program of the USDA Organic Transition Initiative and is administered by the USDA Agricultural Marketing Service (AMS) National Organic Program (NOP).