

GROWING WYOMING NATIVE PLANTS FROM SEED AT HOME



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Growing native plants from seed can be an educational and fun experience. It can also provide a wide variety of native plants for your landscape that aren't commonly available in the horticultural trade.

The steps to germinate many native plant seeds on a small scale are reasonably simple.

1. Obtain the seed. Seed for many common native plants can be found for sale; seed for others can be obtained through specialty seed exchanges (rock garden societies, American Penstemon Society, etc.); and still others can be collected from your own land or the land of friends and family, with permission. For more information, visit <https://bit.ly/BBNativePlants>.
2. Store the seeds until you are ready. Most native seeds can be successfully stored in a cool, dry location. Seed can be cleaned (remove chaff and other non-seed plant residue), placed in seed envelopes, and stored in a plastic container in your basement, refrigerator, or other cool, dry location. If you don't have a cool area, just keep the seeds dry. Seeds from many native plants will stay viable (capable of germinating) for a number of years; a few are more finicky.
3. Pre-treat the seeds if needed. You'll want to determine whether your seeds require a pre-treatment of some kind before they will germinate. Some seeds require no pre-treatment (many plants in the sunflower plant family, for example). Seeds from native plants in our area of the U.S., however, often require a treatment to either germinate well or to germinate at all. There are various kinds of seed pre-treatment, but we are going to stick with a couple of the most common methods: cold moist stratification and scarification. See below for more details.
4. After any needed pre-treatment, plant the seeds and take care of the plants as they grow.



Collecting seed from public lands

Private citizens are allowed to collect small amounts of seed from public lands for personal use (not commercial). This excludes national parks, national monuments, wilderness areas, and state-protected lands. However, collection should be done sparingly and properly. Collectors are advised to follow the 10/10 rule—collect at most only 10% of the seeds from any one plant and only from 10% of plants in a population (a group of the same plants growing in one area).

It is illegal to collect seeds from some plants (e.g., endangered species) and in certain areas. Contact your local U.S. Forest Service, Bureau of Land Management, or similar office to ask about current policies before collecting. Rules change periodically.

For example, at one Forest Service area in Wyoming, these are the stipulations for collecting seed under Personal Free Use – No Permit Required: “Each calendar year, and with the exception of any species that may be threatened, endangered, sensitive, and/or otherwise rare, an individual may engage in removing the following special forest products without a permit and without charge. All collecting shall be at least 100 feet from any road, trail, campground, or facility...Gather no more than 1 ounce of seed (flower or grass or shrub) (once annually).”

COLD MOIST STRATIFICATION

This pre-treatment method involves exposing the seeds to cool, moist conditions for a number of weeks. This can be done in a variety of ways. Here, we'll cover the refrigerator method and outdoor methods.

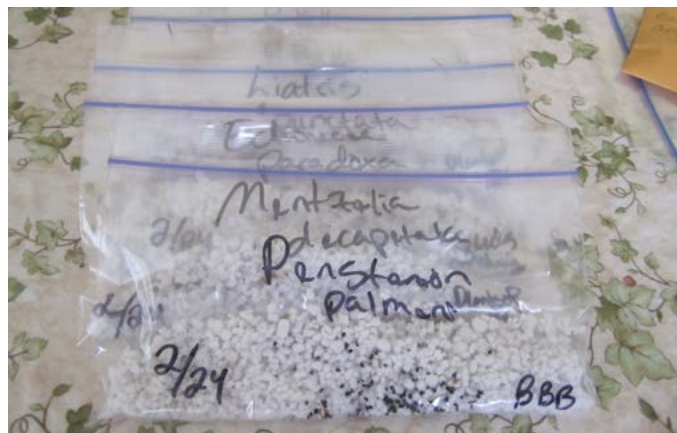
Refrigerator method

You'll need the following items:

- Seeds
- Moistened medium (perlite, vermiculite, clean sand, peat, etc.)
- Some water
- A container to put the seeds and medium in—snack-sized, resealable plastic baggies or plastic or glass containers all work well
- A permanent marker or other way to label each container
- A refrigerator

The first step is to moisten your medium (perlite in this example) with water. It should be damp but not dripping. If you are working with small amounts of seed, you can put a tablespoon of moistened medium in your labeled container and then add the seeds. If any water gathers at the bottom of the container, pour it off. Seal the container and place it in the refrigerator for a number of weeks or until you see the seeds start to germinate.

In this example, I used snack-sized resealable plastic baggies as containers. Once I have all my seed and perlite placed in labeled baggies, I then put them all in a larger baggie and put it in my refrigerator's vegetable drawer.



Labeled baggies of seeds and moist perlite ready to go into the refrigerator.

Using paper towels as a medium

Rather than use a medium like moistened perlite, some people germinate seed between damp paper towels in the fridge. To use this method, place the seed between damp paper towels, then store the package in a resealable plastic baggie (or other suitable container) in the fridge.

I then pull the baggies out once a week and check whether any of the seed is starting to germinate. One of the first signs of germination is the whitish radicle (root) of the plant emerging from the seed. This is a sign that the stratification has worked. At this point, you can either plant all the seed in pots or plant only the seeds that have germinated, placing the rest back in the fridge. I generally plant all the seed (along with the perlite).

If the seed hasn't germinated, I put it back into the fridge until it does, or until the recommended time is up (see below for suggestions on finding this information), or until I lose patience.

If using the baggie method, when should I put the seeds in the refrigerator?

To determine the proper timing, you'll need to answer the following questions and do some calculations.

- When do I want to plant them outdoors? For this example, I'll use **June 10**.
- How long do I want them to "harden off" outdoors before I plant them? **2 weeks**
- How long will they be growing indoors under my lights? **8 weeks** (Note that native annuals, and many biennials, tend to grow more quickly than perennials, so they often need fewer weeks under lights.)
- How long do they need to cold moist stratify in the refrigerator? **6 weeks**



Baggies full of seeds cold moist stratifying in the vegetable drawer.

A total of **16 weeks** is needed to plant the seeds by June 10, so the seeds should go in the refrigerator by February 18 or so. Be prepared though—your seeds could germinate in 5 weeks. It is best if you are ready to pot up on short notice.

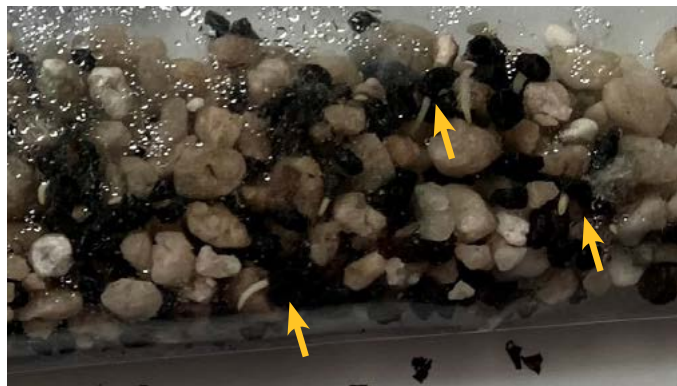
Once the seeds have germinated, the next step is potting up. I generally just plant the seeds in cells or pots filled with seed-starting mix (a soilless potting mix). I lightly cover the seeds with more mix, water them (either gently from above or by placing the pots or cells in a pan of water and letting the water soak up from the bottom), and then place them under grow lights (fluorescent, LED, etc.).

Many of the native plants in our region require full sun to grow well. It's important to make sure your plants receive enough light. If they don't, the seedlings start to stretch (their stems get unusually long) or bend toward the light. However, too much light can burn the foliage or cause distortions in the leaves. If you purchased grow lights, follow the directions on how high

they should be placed above the plants, but also keep observing the seedlings as they grow. Plants will give you signs when they aren't receiving enough light or are receiving too much of it.

Keep your pots of plants moist but not saturated. Many native plants that are adapted to our drier climate will suffer from damping off or otherwise die if kept too wet. Some, including many *Eriogonum* species, are particularly sensitive to overwatering. If overwatering occurs, allow the surface of the medium to dry out a bit (just the top ¼" or less, depending on container size) before watering again. There is a fine line between keeping seedlings too moist and letting them dry out entirely. Pay close attention.

A modified refrigerator method consists of pre-treating the seeds by planting them in pots with potting mix and then watering the pots and placing them in the refrigerator for the required number of weeks. However, this can take up a lot of space in a refrigerator. Using the baggie method allows you to pre-treat a lot of different kinds of seed in a small amount of space.



Many of the penstemon seeds (dark seeds) in this baggie of moist perlite are starting to germinate. Orange arrows point to radicles (roots) emerging from the seeds.



Native plant seedlings growing under LED grow lights.



Butterfly weed (*Asclepias tuberosa*) seeds (large brown seeds) planted in cell packs along with the perlite, soon to be lightly covered with potting mix.

Outdoor method

The outdoor method for cold moist stratification can be completed in containers or directly in the ground.

In containers:

Sometime in winter (often January or February), plant your seeds in pots full of potting mix. It can be helpful to add some sand to the mix so that small pots will be heavier and less likely to fall or blow over; placing them in a nursery-style tray with drainage can also help keep them upright. Label and water the pots. Place the pots outdoors where they will be exposed to the cold and snow. Cover them up with some wire mesh, row cover, or similar to discourage animals from digging into them.

Check on the pots periodically to make sure the medium is staying moist. Seeds may die if they dry out when starting to germinate. One way to keep pots of seed moist longer is to sink

them in a bed of moist sand. They will also not dry out as much if placed in the shade (such as on the north side of a house) and out of the wind. Sometime in the spring or summer the seeds will germinate, and little seedlings will start to show up in your pots. If they do not, either your seed was not viable or that species needs multiple years of cool, moist stratification or some other method to germinate.

In the ground:

In the late fall, before the ground has frozen, plant the seeds in a weed-free area. Take some time to make sure you know where you want the plants to grow. Many of our native plants that are adapted to dry conditions do not transplant well.

Once you've selected a location, plant your seeds. Most seeds do not have to be planted very deeply. Follow the depth instructions on any seed packets. If there are no instructions, cover the seeds with a layer of soil equal to the depth of the seed or with $\frac{1}{4}$ " of soil.



Potted-up seeds cold stratifying in a sand bed. Photo by Amy Fluet



Native plant seedlings that were started indoors and now are being “hardened off” (gradually being exposed to more sun, wind, heat, and cold) under some gauzy window curtains draped over sawhorses. The curtains also provide protection from small hail.

When seeding larger areas, you can scratch the seeds in with a garden rake. Tamp the soil down slightly over the seeds. Do not mulch the area after planting, as some seeds need a bit of light exposure to germinate. You can water the area if it doesn't look like it will snow or rain anytime soon.

In the spring or early summer, the seeds should start to germinate. Be sure you know what your desired plants look like as seedlings so you can distinguish them from weeds. Weed the area frequently and water as needed. If you are planting a larger area or planting a mix of seeds, check out <https://bit.ly/bb-wildflower-planting> for more tips.

SCARIFICATION

Some plants with tough seed coats require scarification (weakening of the seed coat to allow water in) to germinate. Scarification is accomplished by damaging the seed coat in one of a variety of ways. If the seeds are large, the seed coats can be clipped with clippers or gently filed. If they are smaller or there is a lot of seed, you can rub them between layers of sandpaper to scratch the coats. It is essential to do this gently or you may accidentally pulverize the seed. It is best to err on the side of too little scarification rather than too much. You can practice on just a seed or two until you get the hang of how much pressure and time are needed to scratch, but not demolish, that seed type. Stratify or plant the seed soon after scarification.

Many native plants in the Fabaceae plant family (family of peas, beans, etc.) have tough seed coats and germinate better with some scarification. Examples include many of those in the *Astragalus*, *Oxytropis*, or *Dalea* genera. Some plants in other families also require scarification.

Some species can be scarified by soaking them in hot water. Often, boiling water is poured on the seeds and then they are allowed to sit at room temperature for 12 to 24 hours. Purple poppymallow (*Callirhoe involucrata*) is an example of seed you can treat in this fashion.

Sometimes seeds need only scarification; other times they benefit from scarification and then cold moist stratification.

Other pre-treatments include cold dry stratification; warm stratification; treatment with GA (gibberellic acid); and scarification with strong acids. This last method requires expertise, as it can be dangerous if not conducted properly.

How do you know if your seed needs a pre-treatment?

See if the source where you purchased the seed has instructions on which pre-treatments to use and for how long. If they are experienced seed sellers, they should know what works for their seed.



Pots of native plant seedlings ready to be planted!

Search online. Type in the botanical name of your plant (*Asclepias tuberosa*, for example) and the word “stratification,” “germination,” or similar and see what comes up. Expect to find varying suggestions with respect to how long seeds should be cold moist stratified. This is likely due, in part, to the variable cold stratification needs among different populations of the same species of plant, the elevation where the original seed was collected, how long the seed was stored, and more. Nature is variable.

Some particularly helpful online resources are the USDA Restoration, Nurseries, and Genetic Resources propagation protocols searchable database (<https://npr.rngr.net/propagation>), the Ontario Rock Garden and Hardy Plant Society germination database (<https://bit.ly/ontario-germination>), and the websites of many plant societies (such as the American Penstemon Society). If you can't find information on a specific species, look up germination information for another plant in the same genus (first part of the botanical name) to use as a starting point.

When I don't know or can't find information, I default to 8 weeks for the baggie/perlite/refrigerator method. However, I check the seeds each week and, as soon as they show signs of germination, I pot them up. If they germinate and you don't pot them up fairly quickly, the little seedlings may start to mold or rot in the baggie. If a seed has already germinated and formed a tiny seedling, I will still pot it up (gently) along with the remaining seeds in the baggie.

Growing native plants from seed is a learning experience! Take notes on what does or doesn't work for you, learn from your mistakes, and share them and your successes with others. Try several different types of seed at once, and don't be discouraged if one doesn't germinate. That's normal. If you keep at it, you will soon have a yard full of native plants you can enjoy for years to come!

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