



Common Seed Treatments

Stratify (Cold)

Stratification provides a period of moist chilling to break dormancy and help the seed germinate. Mix seeds with 3 times or more their volume of moist perlite or coarse sand in a small plastic zip-loc bag, label the bag (species, date, and required stratification period), and place in the refrigerator.

Note: When our seed packets indicate "stratify," we mean to cold stratify. The packet specifies "stratify warm" if that is recommended.

When the stratification period is complete or germination has begun (white root tip begins to show at one end of the seed), open the bag and plant the seeds immediately. Begin checking for germination several weeks before the end of the required period. Note on your calendar what date you should start checking for germination. Be gentle picking up and planting seeds that have already germinated (try using tweezers). If ungerminated seeds are hard to see in the mix, you can spread the seed-sand mixture on the surface of the seedling pots.

Hints: for dark seeds, use light sand or perlite; for light seeds, use darker sand. *Be sure to dampen perlite before working with it, to avoid breathing the dust.*

You can stratify tiny seeds, such as Penstemon, using moist **paper towels** instead of sand. Make sure the towel is moist, **not** dripping wet or the seed may rot. Fold the paper towel so that it will fit inside a zipped plastic bag. Sprinkle seeds on the paper towel, place the towel in the zipped bag, and label the bag (species and date). Place the bag in the refrigerator and periodically check the seeds for germination. At the end of the stratification period, sow the seeds evenly in a plastic pot and cover with a thin layer of coarse sand.

Stratify Warm

Mix the seed with 2 to 3 times their volume with moist perlite or sand in a small plastic zip bag, label with species and date, and keep in a warm dark place that stays at room temperature night and day.

Scarification

Scarification is a treatment that ruptures a hard seed coat allowing it to be penetrated by moisture. This can be accomplished by rubbing the seeds with sandpaper, a file, making a pin prick, or by nicking it with a knife. Care must be taken not to injure the embryo. Hot water treatment is easier for small seeds or for large quantities of seed.

Hot Water Treatment

Hot water and soak: place seeds in a bowl, cover with six times their volume of water just off the boil (180° - 200°). The seeds should be left in the water to cool and soak until they begin to swell (could be ten minutes or for hours, but always less than 24 hours). Then plant immediately in seedling mix.

Hot water and stratify: pour hot water over seeds, then stratify (don't wait for seeds to swell).

Planting Outdoors

Seeds of many California native plants will do well sown outdoors in the fall. The seeds will need protection from the elements and wildlife. Some seeds require the diurnal fluctuation of temperature that outdoor planting provides. When needed, this will be noted on the packets. In some cases you may not need to stratify seeds if you plant outdoors in autumn in an area where winters are cold.

Planting Mix for Seedlings

There are many mixes suitable for seedlings. Many sources recommend soil-less mixes, and these must be supplemented with fertilizers after germination of the seeds. A simple mix recommended for California native plants (and other plants that must have good drainage) is 4 parts of a sterilized commercial potting soil and 1 part moistened perlite.

Prevent Damping Off

To help prevent damping off (tiny seedlings fall over dead), surface sterilize planting mix by pouring boiling water three times over the top of the soil in prepared pots. This works well for seeds such as Penstemon, which tend to damp off easily. Keeping containers and utensils very clean will also help. In some cases it may be advisable to wash containers with a weak bleach solution (9 parts water to 1 part bleach).

Planting Depth

In general, plant larger seeds deeper than smaller seeds. Estimate 2 - 3 times the diameter of the seed and plant them that deep. You can sprinkle fine seeds on the surface and cover with a thin layer of coarse sand. Avoid using organic mulches (peat moss) for plants that require well-drained, dry soil; it is better to cover the surface with coarse sand, pumice, perlite, or gravel.

Moving Seedlings on up

Seedlings should be thinned and transplanted after 3 sets of leaves have developed or seedlings are showing vigorous roots. (Avoid root-bound conditions.) Water the pot thoroughly then rap it to loosen soil and root ball. Carefully separate seedlings and move into six-packs or other small pots. Move to larger pots when it's clear that roots are coming out the bottom of the container. Be sure seedlings don't dry completely, and keep them in a shaded place when first transplanted.

Keep Records!

Keep your own records of when you stratify and plant seeds, transplant or pot up seedlings. It is also helpful to note when seeds germinate and when plants flower. The more details you include, the more useful your notes will be when you refer to them next time.

Recommended Reference: *Seed Propagation of Native California Plants*, Dara Emery, published by Santa Barbara Botanic Garden, 1988.

Prepared by the Seedy Friends and sponsored by the *Friends* of the Regional Parks Botanic Garden.