

# Seed Starting: Breaking Dormancy

*Breaking dormancy of a seed is like waking it up from a sleep. The four key requirements are water, oxygen, light and temperature. There are a few techniques that will increase the germination percentage and help control timing of germination. Basically, water and oxygen need to penetrate the seed coat to initiate the break of dormancy. Some seeds need a combination of water, oxygen, light and/or set temperature.*



## *Rule of Thumb*

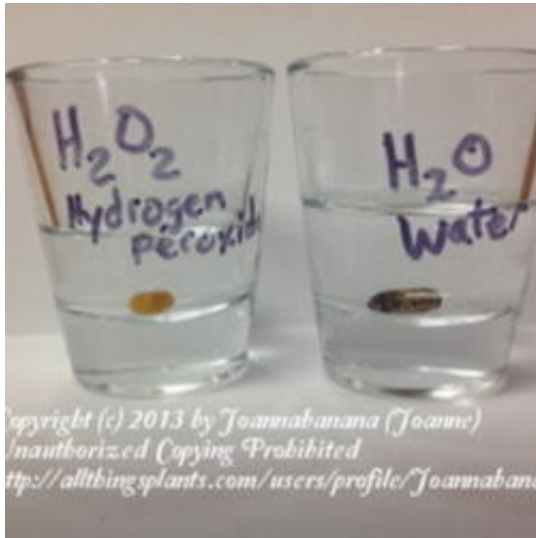
*Nick before you soak; soak before you sow*

## **The Three "S" Techniques - Soak, Stratification, Scarification**

### SOAK

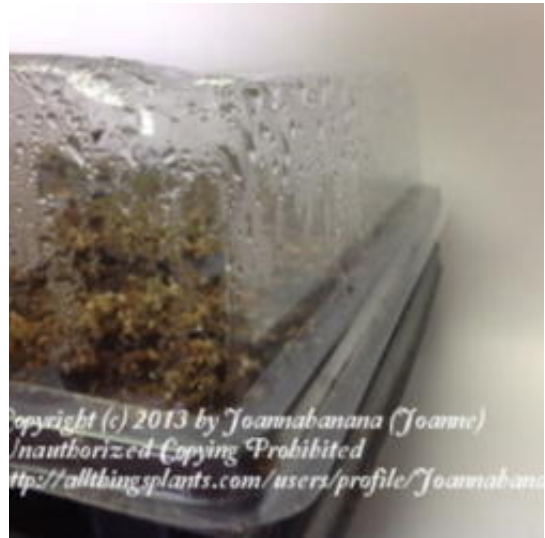
Hydrating the seeds is typically the *1st step* to breaking dormancy. There are a few options to accomplish this. For small seeds, placing a clear plastic dome over the seeding tray with moistened soil medium will provide a very humid damp environment and the seeds will swell very quickly. For large seeds, soaking, prior to sowing, in water until they swell will also accomplish

dormancy break. Follow the seed package instructions for length of time to soak (typically at least 2 hours, but no more than 24 hours). You can soak pretty much any seed. For extremely tough, thick or hard seed coats, soaking in hydrogen peroxide will help soften the seed coat.



Moonflower soaking in hydrogen peroxide

Green Bean soaking in water



Alyssum seeds are tiny.

A dome is enough to provide hydration

Another method of introducing moisture is to roll the seeds in a damp paper towel and place in a plastic bag. Check daily and when the seeds sprout, sow in damp soil medium. Don't worry if you get a bit of the paper with your sprout, just plant it with the bit of paper. Be careful to not damage the sprout. Some seeds like sweet peas need to be nicked before hydration.

*Important: The seed will die if it dries out before sowing. Seeds that were hydrated must be sowed immediately into damp soil medium. Compact soil will deprive roots of oxygen.*

## STRATIFICATION

Subjecting a seed to a cold, dark and moist environment is stratification. Placing a seed package in the fridge is a great seed storage practice, but it will not break dormancy. You need to introduce the water first, then the cooler temperature. Many perennial seeds break dormancy by stratification. Using the damp paper towel method and placing in the fridge will work for many seeds. Sowing the seeds into damp soil medium in an egg carton and placing in the fridge for a few weeks will also provide the cool, damp and dark environment to break dormancy. At the first sign of germination, place under lights. Seedlings need light to survive.



Controlled stratification in the fridge  
(typically a few weeks)



Controlled stratification outside  
(typically a couple of months before last frost)

Wintersowing is an easy stratification technique too. Sow seeds in damp soil medium in a prepared milk jug and place outside in late winter or early spring. The seeds will germinate when they are ready. Periodically check the jugs so they don't dry out.

The opposite of cold stratification is incubation. Incubation will often speed up germination rates. Seed starting heat pads are readily available and easy to use. They have a thermostatic control and keep the soil medium warmer than the ambient temperature. They are safe and slightly warm to the touch. Once

the seedlings have germinated, remove from the heating pad. Also, don't put the heating pad on a timer, since you will want the heat day and night.



*Pansy seeds respond well to alternating a few days with bottom heat on and a few days with no heat*

## SCARIFICATION

Scarification is simply scratching or nicking the seed coat. Most often, the seeds are fairly large and you can scarify with a knife or sand paper. You don't want to gouge too deep. A small cut into the seed coat is sufficient to allow water to penetrate. Soaking after scarification speeds things up a lot.



Tweezers & knife used to nick  
seed coat

Rubbing seed between two pieces of  
sandpaper to scratch seed coat

## Light

Once the moisture is introduced, seeds may need light or darkness to initiate germination.

### LIGHT

The seeds that require light to germinate, for example petunias, surface sow and place under lights. Artificial lights are not the same as natural sunlight and 15 to 16 hours a day of artificial light is a good guideline. The light bulbs should be situated as close as possible, about 2 inches above the seeds and/or plants. As the seeds germinate and the plants grow, you will need to adjust the light fixture accordingly. There are many options for grow bulbs, but the best choice is a bulb that offers a high spectrum of light. Some plants need the "red" light in the spectrum, like lettuce, and others like impatiens require more "blue" light. If you are using a lower spectrum bulbs, you can place coloured transparent plastic on the dome to help with germination for the specific plants.



Lights are 2 inches above plants



Impatiens with blue plastic cover

The easiest way to provide *darkness* is simply to cover the seed with at least 1/4" of soil medium. Some package instructions for small seeds, for example salpiglossis, advise to cover the tray of surface sown seeds with black plastic. I found higher germination percentages with sowing 1/4" depth for salpiglossis. The key factor of live or die is that as soon as the seed has germinated, it will need light immediately. Sowing 1/4" deep under lights will accomplish this and is the best solution since all the seeds rarely would germinate at the exact same time. One day without light could result in seedling casualties.

## BREAKING DORMANCY TECHNIQUES

There are certain seeds that require other environmental conditions such as extreme heat (fire) or have a natural coating that is broken down once the seed passes through a bird's digestive system. I have no experience with these seeds, but would suspect you would be able to get "pre-treated" ones.

These recommendations will increase your germination percentages greatly. In nature, a very small percentage of the seeds actually germinate and if they get the "perfect" conditions they are often fairly invasive. These controlled environments will help the seeds germinate in a short period of time and at the same time. Wake up your seeds with water, oxygen, light and temperature.