

# **A BRIEF GUIDE ON HOW TO GROW TREES**

## **DORMANCY:**

A mature, live seed, which will not germinate promptly when placed under suitable conditions is said to be dormant. The mechanisms that prevent germination vary widely and it is not necessary to understand them to grow trees from seeds successfully. What is important for us to understand is how we can get the dormant seeds to germinate.

## **OVERCOMING DORMANCY:**

Relatively, simple and effective methods exist to overcome the dormancy of our tree and shrub seeds. The most common requirements are exposure to periods of warmth and/or cold.

The simplest method of providing these conditions is to place the seeds outdoors, mixed with a moisture retentive and aerated medium (usually a sand/compost mixture).

## **SEED PRE-TREATMENT:**

In order to be successfully treated seeds must be moist. Seeds that are placed into treatment immediately following extraction will require soaking in water for 24-48 hours. Soaking dried seeds performs two functions. Firstly, the seeds take up water and, secondly, some of the germination inhibitors in the seed coat are removed.

## **SEED PRE-TREATMENT SUMMARY:**

The typical time periods of warmth and cold are needed by seeds of different trees. These periods help overcome dormancy and without them many seeds simply wouldn't germinate. Pre-treatments are done to allow the embryo to develop, which will then allow it to grow into a tree. This typically takes 30 to 90 days or longer. Every type of seed is different, and you need to do an internet search to find out your seed's specific needs.

## **“STRATIFICATION” METHOD (WARM AND/OR COLD):**

Seeds of most species of trees should be mixed with a moisture retentive and aerated medium in a 50:50 ratio of seeds and mixture by volume. The ideal mixture is 60% coarse, sieved peat-alternative and 50% coarse sand.

The moisture should be moist but not waterlogged. Water is added to the dry ingredients, thoroughly mixed and tested by squeezing a handful. When only 1 drop of liquid can be squeezed out between your fingers the mixture is ready. This ensures that the seeds remain moist throughout the treatment period, but the exchange of gases (oxygen and carbon dioxide) is not inhibited. The seeds and/or mixture are placed in a suitable container. Ordinary plant pot (with a layer of sand above and below the seed/compost mixture) are fine. Seeds of alder and birch can be stratified “naked”, (i.e. without the medium). The seeds are placed in cotton bags and soaked in cold water for 48 hours. After a superficial drying, they are placed in polythene bags, which are loosely tied and placed into the fridge for 4-8 weeks.

## **HOT WATER TREATMENT:**

The seeds will have been collected and stored dry. Just before sowing, the seeds are placed in a heatproof container and two or three times their volume of boiling water is carefully poured over them. They are left in the cooling water for another 24 hours. They are then ready for sowing.

## **NON-DORMANT SEEDS (REQUIRING NO TREATMENT)**

There are a select few species that fall into this category. The main problem with these seeds is not how to break their dormancy, but how to stop them from germinating before you want them to!

The best thing to do with these seeds is to sow them as soon as possible after collection (preferably immediately) and then to let nature take its course.

PLEASE DO AN INTERNET SEARCH FOR YOUR SPECIFIC SEEDS AND FOLLOW THE REQUIRED PRE-TREATMENT TO BREAK THEIR DORMANCY. DO NOT EXPECT YOUR SEEDS TO GROW IF YOU DO NOT PRE-TREAT THEM. DON'T PLANT THE SEEDS UNTIL THEY ARE PRE-TREATED.

## **THE 3 MAIN COMPONENTS OF SEEDS**

**THE SEED COAT.      THE EMBRYO.      THE ENDOSPERM.**

### **THE EMBRYO (ZYGOTE):**

Located in the innermost part of a seed; it has the structure and information necessary (root, stem, and Cotyledons (leaf-like parts) to produce a new plant. (Dormant seeds require pre-treatments that trigger Embryo development and germination.)

### **THE ENDOSPERM:**

The food source for the embryo until it is able to photosynthesize. It's made up of starches, oils and proteins. It protects the embryo during seed development and germination. The endosperm is consumed as the embryo develops.

\*(Some seeds also have a Megagametophyte as well as an endosperm.)\*

### **THE SEED COAT:**

The outermost layer of a seed. It protects the embryo from damage, it can restrict oxygen uptake, gas exchange and water uptake of a seed. The seed coat protects the inner tissues from insects, fungi, adverse conditions and mechanical damage. It is derived entirely from the mother tree. Seed coats vary in terms of color, shape, texture, and the presence of resin vesicles. These attributes, along with seed size, form the basis for species identification. The seed coats vary from species to species, helping to identify seed types. Seed coat color is related to the presence and distribution of tannins within the cells of the seed coat. The tannins accumulate during seed development causing a seed's appearance to change from light to dark. Seed color can vary from seed to seed. A seed's color or appearance is influenced by surface moisture amounts.

## **THE SEED COAT HAS 3 DISTINCT LAYERS**

These layers provide protection for the developing embryo.

The Outer Layer: Sarcotesta

The Middle Layer: Sclerotesta

The Inner Layer: Endotesta

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## **IMPORTANT INFORMATION ABOUT "FLOAT TESTS" AND SEED VIABILITY**

Float Tests are a quick way to check the viability of some seeds, but not a reliable test for viability of dormant/dry tree seeds. They will almost always float due to being dormant/dry seeds. Float Tests are a guidance but are not always 100% accurate for the seeds contained in the envelope. Do not blindly throw away the seeds purchased if they float.

**\*\*DORMANT TREE SEEDS REQUIRE SCARIFICATION AND STRATIFICATION PRIOR TO PLANTING.\*\***

Float Tests are good for fresh seeds; DORMANT TREE SEEDS WILL ALMOST ALWAYS FLOAT. (The seeds in the packet are dormant and are not fresh seeds.)

DO NOT throw the seeds away if they do not float. Many dormant tree seeds will float. Also, drier seeds remain viable longer than fresh ones.