



Growing Trees from Seed

Introduction

Growing trees from seed can be very rewarding, and for many species, fairly easy. It requires care, and time, but very little in the way of specialist equipment or cash expenditure. This note is designed to provide the information you need to collect seed and set up a small nursery, at school, for your community group, or just in your own garden.

Tree seed comes in a variety of types and sizes, from large nuts to berries and tiny seed, and individual species have different seasons and requirements for collection, treatment and planting. The table on pages 2 & 3 contains an easy guide to a range of species common to the north highlands. Page 4 describes how to set up a small nursery.

Collecting

Seed production varies from year to year, and some species only produce large volumes of seed in "mast" years, which may be several years apart. For all species, the following guidelines apply:

Always ask permission from the landowner/occupier before collecting seed.

As far as possible, collect seed from mature, well-formed, healthy trees.

Try to collect seed from more than one tree to encourage genetic diversity.

Remember to keep a record of what, where, when, how much (weight) was collected and how the seed was treated. After sowing, label the seedbeds, and later, the trees.

Sorting and Extracting Seed

Large seed (nuts) should be sorted by floating: acorns, hazelnuts, beechnuts and cherry-seed can be soaked (for 24 hours) and 'empty' seed will float to the top. 'Full' ones will sink to the bottom and are the ones likely to grow.

For fruits and berries, removing the flesh is done

through bruising the fruit, leaving it a few days and mashing it in a container. After that the pulp can be washed off (and used for making jams or jellies).

Extract conifer seed by putting the cones in a container in a warm place. Once the cones open, shake vigorously (being sure to keep the lid on!).

Conditions

Most seed have a period of dormancy before they germinate. The breaking of dormancy is influenced by moisture, temperature, oxygen and light. This can be artificially hastened (by changes in temperature and removal of seed-flesh or coats). Better is to leave time and natural processes to take their course in an environment of suitable temperatures, moisture and protection from birds, slugs and rodents. This process is called stratification.

Stratification

Stratification aims to provide an ideal environment for seeds to break dormancy, ready to germinate.

The method is very simple:

The seed is mixed with at least an equal amount of coarse sand (sand/peat/ground bark/leaf mould are other mixes to try) and put into the container (The size required depends on the quantity of seed - margarine tubs, plant-pots, fish-boxes and barrels can all be used) It is important the mix is exposed to the outside temperatures, rainfall and air, is well-drained, and is protected from 'predators' (by wire mesh or netting).

Storage

Some seed doesn't require stratification, and can be stored in air tight containers in a cool place or in the fridge. If not all seed is needed in the same season it can also be stored long(er) term in a freezer. Check stored seeds periodically to ensure they are not spoiled.

Tree Species	Collection	Storage
Alder	October – January Pick fruit-cones from the tree	Store cool & dry until spring (After collecting dry the cones & shake vigorously to extract the seed)
Ash	September - December Pick bundles of fruit from the tree (can be green)	-
Aspen +	June (rarely sets seed in Scotland)	No storage possible
Beech	October, November Collect nuts from tree-floor	Can store cool & dry; protect from mice & birds
Birch	August, September, October Pick green from the tree	Dry out catkins & store in fridge (2-4°C)
Blackthorn/Sloe & Hawthorn	September, October, November Pick berries from tree when ripe	-
Broom	August, September Pick from tree before pods pop open	Pods open up if stored in warm, dry place
Bird Cherry & Wild Cherry/Gean	July, August, September Pick fruit from the tree when ripe	-
Horse Chestnut *	October Collect conkers from under the tree	Store in moist conditions all through winter
Elder •	August, September Pick berries when ripe	-
Wych Elm	June, July Pick green from the tree or brown from tree-floor	(Can be dried and stored until needed)
Hazel *	October, November Pick from tree when nuts are ready	Can store cool & dry
Holly •	November, December, January Pick from tree when berries are ripe	-
Juniper •	October-January Pick from tree when berries are ripe	-
Oak *	October, November Collect from tree or from tree-floor	-
Pines, Spruce & Larches	January, February Pick cones off the tree	Store in fridge
Rowan	August, September, October Pick berries when ripe	-
Scots Pine	January, February Pick cones off the tree (before cones open)	Store in fridge
Sycamore & Norway Maple	September, October Collect from tree or tree-floor when winged seed is ready	Store cool & dry
Willow +	June (for about 1 week) Timing is crucial with this fluffy seed, pick as soon as catkins open	No storage possible

Notes: + Willow and aspen are more usually grown from cuttings (in the dormant season) and transplanted root suckers (in January) respectively;

* relatively easy to grow; • might take more trying.

Tree Species	Treatment	Aftercare
Alder	Option of stratifying the seed 2 months before sowing; after germination scatter bashed Alder root nodules around seedlings	Watering of seeds & newly germinated seeds for first 20-30 days, every day it doesn't rain. Line out in 2nd season
Ash	Do not try and separate seed from wing; Stratify for 2 winters in sand	Water & weed Line out in 2nd season
Aspen +	Sow immediately in fine seed-bed	Water with a fine spray during germination & weed. Line out in 2nd season
Beech	Sow immediately / From mid-Feb stratify for 3 weeks	Water & thin to 10 cm apart when 1st leaf appears. Line out in 2nd season
Birch	Option of stratifying for 2-3 months before sowing	Watering necessary if not raining & weed. Line out in 2nd season
Blackthorn/Sloe & Hawthorn	Stratify in sand for 2 winters / Let flesh rot & stratify for 1 winter	Water & weed Line out in 2nd season
Broom	Soak seed in just boiled water for up to 24 hours before sowing	Water & weed / May germinate over 2 years. Line out before seedlings grow too big
Bird Cherry & Wild Cherry/Gean	Separate seeds from pulp, stratify until spring	Water & weed Line out in 2nd season
Horse Chestnut *	Sow in spring	Water & weed Line out in 2nd season
Elder •	Stratify in sand for 1 winter	Water & weed Line out in 2nd season
Wych Elm	Sow immediately, well watered before & after covering	Water & weed Line out in 2nd season
Hazel *	Soak for up to 2 days, sow immediately & protect from mice / Stratify in leaf-mould over winter & sow in spring	Water & weed Line out in 2nd season
Holly •	Stratify in sand for 2 winters / Separate flesh & stratify 1 winter	Water & weed Very sensitive to transplanting; transplant in growing season (May-September)
Juniper •	Stratify for 1 winter (in 50-50 peat/sand mixture)	Water & weed May take 2-3 years to germinate Line out in 2nd growing season
Oak *	Sow immediately, covered thinly with leaf-mould to keep moist	Water & weed Sensitive handling when transplanting in 2nd season
Pines, Spruce & Larches	Collect from the tree & extract seed by putting cones in warm place & shake them	Water & weed Line out in 2nd season
Rowan	Stratify for 1 winter / Remove flesh & stratify for 1 winter	Water & weed Line out in 2nd season
Scots Pine	Collect from the tree & extract seed; sow in spring; cover ground with Scots Pine needles when seedlings appear	Water & weed Need lots of light to germinate & grow Line out in 2nd or 3rd season
Sycamore & Norway Maple	Sow immediately / Stratify for 2 months	Water & weed Line out in 2nd season
Willow +	Sow immediately; in moist soil & cover seeds lightly; keep moist	Cover with glass or polythene; gradually expose over 2-3 weeks Line out in 2nd season

Setting up a nursery

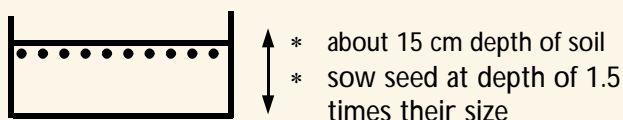
Open ground nurseries typically use a two-stage process: seeds are sown at high density (500 - 600/m²) on prepared seedbeds to ensure maximum germination and good growth in the first season. Seedlings are then lifted when dormant and transplanted into lines (@ 100 - 150/m²). This space gives them the chance over the following year(s) to grow into trees that can be planted out into their permanent sites (Usually this is when they are between 30 and 60 cm tall).

Seed is generally sown when the ground is frost-free and the soil is warming up in spring, although some exceptions should be sown immediately (see table). Warm enough temperatures and the absorption of water activate the growth process. First the root and then the shoot grow to break the seed-coat. Growth is further influenced by the presence of water, oxygen, nutrients and shelter.

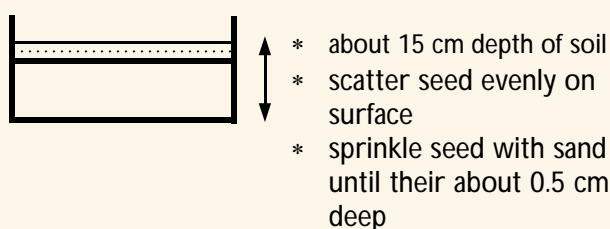
Sowing seed in Fish-boxes

Fish boxes make an excellent first-year bed for small-scale nurseries. Mix garden soil with some well-rotted compost, or leaf-mould, and some coarse sand, to fill the fish-box.

1. Large seed



2. Small seed

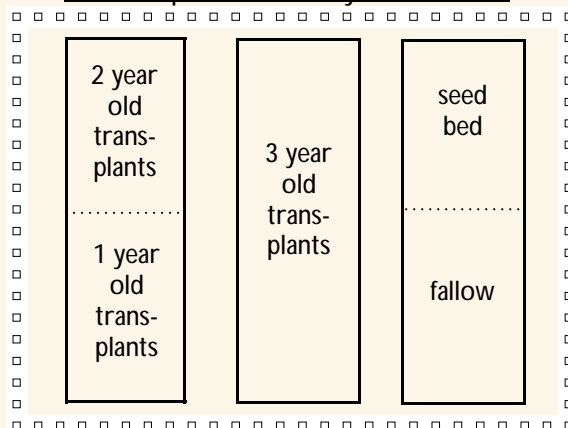


Preparing Nursery Beds

The nursery bed needs to be free of weeds, not too waterlogged or dry, relatively sheltered and not too shady. Dig the bed to a depth of 30 cm, clearing all grass, roots and stone from the soil. Mark out the boundaries of your planting bed with planks, which will protect the seedlings from predators and gives a

windbreak. Add 10cm of gravel to the base of the bed to provide good drainage. Refill the hole with the soil up to 5cm from the top. Sieve the last 5cm of soil onto the planting bed. This creates a fine tilth, which helps the seedlings to grow. You might need to put fencing around the beds to protect them from predators.

An example of a nursery with 3 beds:



Gentle handling is essential when transplanting seedlings. Damage to the rootstock can set back growth and even kill the tree. Be careful to protect the roots from the wind, because wind-blow will dry them out very quickly.

When trying to grow trees from seed it is important to remember that conditions vary from site to site, and from year to year. If there is one golden rule then it is to imitate nature as much as possible!

More information

If you would like more information on the topics in this leaflet you can get in touch with North Highland Forest Trust at any time. Further copies of this information note can be downloaded from our website.

North Highland Forest Trust Contact Information

North Highland Forest Trust
Alba House
Main Street
Golspie
Sutherland
KW10 6TG
01408 633986
email@nhftgolspie.f9.co.uk
www.nhft.org.uk

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