



the
Autumn Seed Harvest
handbook

growing our native trees from seed



*Conservation Volunteers
Northern Ireland*

BACKGROUND

If left undisturbed, most of Europe would be covered in woodland. In Northern Ireland, we have lost much of our natural woodland heritage and we need to ensure that this trend is not allowed to continue. Native woodland covers only 1.2% of the land surface area of Northern Ireland, which is very low when compared to the European Union average.



Sessile oak in Correl Glen

History of tree coverage in Ireland

During the last ice age, Ireland was almost entirely covered by ice. About 12,000 years ago, as the climate slowly warmed and the ice retreated, trees began to rapidly colonise the land. This started with juniper, willow and birch and climaxed with high canopy woodland, which consisted mostly of oak and wych elm. Around 7,000 years ago, woodland covered at least 80% of the land surface, although a number of trees considered native to Britain and continental Europe failed to reach Ireland. This was due mainly to the flooding of the landbridges that connected Ireland to the rest of the continent.

Woodland began to disappear over 5,000 years ago. At this time there was a dramatic decline in the elm population. This is thought to have been caused by a combination of disease and human activity. Aided by the death of millions of large elms, people began to clear forests and, instead of hunting and gathering, settled in suitable areas where they learned to farm.

Traditions of woodland management and exploitation have existed for thousands of years beginning with these early farmers. They used the trees in all aspects of their lives. Trees provided such things as shelter, clothing, tools and food for themselves and their animals. This led to a gradual clearance of large areas of woodland as the population grew.

Are trees important?

The small pockets of native woodland that still exist in Northern Ireland provide an important home for our wildlife - the birds, mammals, mosses and lichens, fungi, insects and plants that are adapted to life within and around them. Some of these plants and animals can live nowhere else and rely on trees to provide at least some of their needs. Without them they would, and have, become rarer and rarer. Woodlands play a vital role in wildlife diversity.



Sessile oak seedling

Which trees?

Many of the trees that we see in our modern landscape didn't find their own way here, but were introduced by humans. Even many of our native trees have been imported. Vast forests still exist in many central and eastern European countries enabling seed to be collected for growing in nurseries all over Europe. The resulting trees are then planted, and have been planted for many years, in Northern Ireland. Studies have shown that important differences exist between a tree grown from a seed collected here and from one collected elsewhere in Europe. There are even differences between trees growing in, for example, Antrim and trees growing in Killarney.

These differences have developed over thousands of years of adaptation to local climate and soil conditions. The trees that were best adapted to our damp, mild climate survived and reproduced. They passed on their genetic make-up from one generation to the next.



The descendents of these original trees are said to be of local origin. It is believed that they are better adapted to survive and reproduce and support a wider range of other wildlife.

An ancient woodland will support a wider diversity of life than any newly planted woodland. It takes many generations of trees, living and dying, to provide the ideal habitat for many of our native plants and animals but, provided they are given the time, the list of wildlife that any woodland supports will grow and grow.

Growing trees

Growing a tree is something that everybody can do. There are a few tried and tested rules to follow but, other than these, all that is required is to collect the fruits (nuts, berries, etc.), extract the seed and to break any dormancy that is present. From then on, tree seed is treated just the same as any other seed - basic requirements of moisture and warmth enable the seed to germinate and grow. Keep your young trees watered regularly and fed now and again and within a year or two they will be ready to be planted into their final growing positions.



Hazel wood in Glenarm

“Trees act as pegs, fountains, oceans, pipes and dams, their work ramifying through the whole economy of nature. They hold up the mountains. They cushion the rain-storm. They control the flood. They maintain the springs. They break the winds. They foster the birds.”

From The Triumph of the Tree by John Stewart Collis

It is improbable to hope that the tree cover on this island could be restored to its former glory, but we, as individuals and communities, can go some way to redress the balance and help to maintain and improve what exists and perhaps create new woodlands that our descendants and local wildlife can enjoy into the future. Growing and nurturing a tree is a long-term process. It may take up to 50 or 60 years (depending on the species) before a tree we grow is mature enough to produce seed itself and still more before it reaches its full, magnificent glory.

Choosing the right tree

When you first start out, you should ask yourself the question: Where am I going to plant these young trees? It is very important to choose your trees carefully. For example, it wouldn't be a good idea to plant an oak tree only a few feet from your house. It would grow too large and could damage the house if it wasn't removed first! Not what we have in mind for our young trees.

If you know where you want to plant your trees, it will be useful to visit the site and make a note of the trees that are growing well in the area, although bear in mind that some may have been planted. To recreate a natural woodland, you should be choosing species that occur naturally in the area and using these local trees as your seed sources. In places where few trees are left, look at areas with similar soil and rainfall patterns.



Pedunculate oak in Castle Archdale

The table on the next two pages lists the characteristics of most of our native trees that can be grown from seed. It provides you with some of the information you will need to help you make the final choice of trees that will grow well on your site and support a wide range of other wildlife. Good luck!

Native tree and shrub characteristics

Name	Height range	Preferred conditions	Doesn't like....	Wildlife value
Alder <i>Alnus glutinosa</i> Fearnóg	10-20m	Wet ground & stream banks. Will grow in soil with low nitrogen levels.	Dry, sandy ground.	Early flowering, good for insects. Seeds last long providing food for birds.
Ash <i>Fraxinus excelsior</i> Fuinseog	30-40m	Deep, well-drained, neutral to alkaline soil.	Waterlogged sites.	Casts light shade, so good for ground flora. Seeds provide food for birds and mammals.
Aspen <i>Populus tremula</i> Crann creathach	20-30m	Grows well on poor soils and in harsh conditions.	Very dry sites.	Very good for insects.
Birch, downy <i>Betula pubescens</i> Beith chlúmhach	5-15m	Light, infertile soil. Does well on poorly-drained peat.	Shade.	Seeds are popular with small, seed-eating birds.
Birch, silver <i>Betula pendula</i> Beith gheal	5-15m	Likes a well-drained soil.	Wet conditions.	
Blackthorn <i>Prunus spinosa</i> Draighean	1-5m	Grows almost anywhere, even in windswept, coastal conditions.	Waterlogged sites.	Early flowering, so good for insects. Provides cover and food (berries) for birds.
Broom <i>Cytisus scoparius</i> Giolcach sléibhe	<2m	Grows best on light, dry, acid soils.	Wet conditions.	Good for insects. Along with gorse (<i>Ulex europaeus</i>), it is one of the foodplants of the Green Hairstreak Butterfly.
Cherry, bird <i>Prunus padus</i> Donnoisc	5-10m	Likes damp fertile soils. Tolerant of more acid or sandy soils.	Exposed sites.	Early flowering. Very good for insects. Fruit good for birds.
Cherry, wild <i>Prunus avium</i> Crann silíní fiáin	10-20m	Prefers fertile woodland soils but tolerates clay as well. Shallow rooting.	Wet sites.	Early flowering. Good for insects. Fruits excellent for birds.
Crab Apple <i>Malus sylvestris</i> Crann fia-úll	5-10m	Prefers neutral or alkaline soils, but thrives in all fertile (including heavy) soils.	Wet sites.	Early flowering so good for insects. Fruits good for a range of different animals.
Elder <i>Sambucus nigra</i> Tromán	<5m	Prefers nutrient rich soils. Useful for extremely chalky sites.	Very poor, dry sites.	Good for insects and birds. An important berry crop.
Gorse <i>Ulex europaeus</i> Aiteann	<2m	Prefers dry and neutral soils.	Poorly-drained heavy clay soils or shallow chalky soils.	Good for insects. Provides excellent nesting cover for birds.
Guelder Rose <i>Viburnum opulus</i> Caorchon	<5m	Grows best on fertile alkaline clay soils, but also likes neutral wet soils.	Acid soils.	Flowers good for insects. Berries enjoyed by birds.



Native tree and shrub characteristics

Name	Height range	Preferred conditions	Doesn't like....	Wildlife value
Hawthorn <i>Crataegus monogyna</i> Sceach gheal	<5m	Tolerates a wide range of soils. Adaptable, growing well in industrial areas/exposed sites.	Wet sites or very acid soils.	Excellent for wildlife. Early flowers for insects, fruits good for birds. Thorny cover for nesting and roosting birds.
Hazel <i>Corylus avellana</i> Coll	5-10m	Prefers heavier fertile soils. Will tolerate some shade. Ideal for hillsides and steep banks.	Acid soils.	Associated with a rich ground flora. Very good for insects. Nuts eaten by a variety of animals.
Holly <i>Ilex aquifolium</i> Cuileann	<10m	A very hardy species. Tolerant of exposed sites and shade. Prefers neutral to acid peaty soils.	Wet, poorly drained sites.	Berries important for thrushes and other birds, which can also shelter among its evergreen leaves.
Oak, pedunculate <i>Quercus robur</i> Dair ghallda	30-40m	Prefers clay soils and damp lowlands but generally tolerant.	Poorly drained, infertile soils.	Excellent for many forms of wildlife, the native oaks support more insect species than any other tree. They can live for a long time and throughout their lives (and after!) provide a range of habitats for plants and animals.
Oak, sessile <i>Quercus petraea</i> Dair ghaelach		Tolerates poorer, lighter, more acid soils than <i>Q. robur</i> . Also more shade and frost tolerant.		
Purging buckthorn <i>Rhamnus cathartica</i> Paide bréan	3-5m	Chalky soils and near to water.	Acid soils, heavy shade or dry sites.	Foodplant of the Brimstone butterfly. Berries for birds.
Rowan <i>Sorbus aucuparia</i> Caorthann	5-15m	Grows in poor, thin and acid soils. Very hardy. Tolerant of exposed sites.	Wet conditions.	Supports many insects and provides an important berry crop for birds.
Scots pine <i>Pinus sylvestris</i> Péine albanach	20-30m	Thrives on poor, light, acid soils.	Alkaline conditions.	Provides nesting sites for birds and seeds for red squirrels.
Spindle <i>Euonymus europaeus</i> Feoras	<6m	Prefers alkaline soils but tolerates a wide range of non-acid soils.	Very shady conditions.	Good for insects.
Whitebeam <i>Sorbus aria</i> Fionncholl	5-15m	Prefers alkaline soils but grows in a wide range of soils. Tolerates coastal exposure.	Very wet sites.	Provides food for animals through its flowers and fruit.
Willow <i>Salix spp.</i> Saileach	5-15m	Along waterways and wet soils.	Dry sites.	Excellent for nesting birds and provides valuable early flowers for insects.
Wych elm <i>Ulmus glabra</i> Leamhán sléibhe	25-35m	Prefers rich, damp soils.	Very dry sites.	Early flowers for insects and seed for red squirrels.
Yew <i>Taxus baccata</i> Iúr	5-15m	Well drained alkaline soil. Will tolerate shade.	Very wet sites.	Provides berries for birds.

COLLECTING SEED

Now the real fun begins - getting out into the countryside and collecting the seeds that will grow into the trees of our future! Please remember to obtain permission from the landowner before you begin collecting. A site with special protection, for example an Area of Special Scientific Interest (ASSI), also requires government permission.



Collecting holly in the glens

Identifying seed sources



Downy birch seed

There are a number of guidelines that we can follow to help us identify woodlands containing local trees. We can look to map and field evidence to achieve this. This might include: evidence from place-names; historical documents; analysis of pollen found preserved in peat bogs or lake sediments; woodland structure (the types of trees and shrubs it contains); historical features; indicator plant species - some plants spread very slowly, so, if they are present in large numbers, it might mean the woodland is old; and DNA testing of plants. Ancient and semi-natural woodlands are ideal places for collecting seed. Freshly regenerating sites of willows, birch and rowan, as a result of natural seed dispersal, would also be acceptable.

What we are looking for are trees that are well-adapted and occurring naturally in Northern Ireland. Look at the list on pages 4 and 5. These are our native trees.

If you find these trees growing in places where it is unlikely that they have been planted, for example, by the shores of a lough or in steep glens, then collecting from them would be fine. Try and collect seed from a number of individual trees as this will help to maintain genetic diversity.



Ripe hazelnuts

When to collect

It is important to collect seeds at the right time. If collected too early, the seeds may not be fully developed and you may affect the ability of the seed to germinate. If you wait too long, the seeds might be taken by the wind or the local wildlife. Wild cherries will be quickly eaten by birds or wasps. Hazelnuts are easily discovered by mice and squirrels. Acorns might be carried away and buried by jays for eating throughout the winter. Even gorse seed can be eaten by tiny weevils if the pods are left too long on the plant! Seeds that are dispersed by wind, like birch, can be blown away in even very light winds.



Fruits of the wild cherry

It is a good idea to regularly check the development of fruits that you plan to collect. This helps to determine the best time for collection. Look at the table on page 7.

Methods of collection

If the crop is within easy reach, some seeds can be collected by hand from the tree. With certain types of seed, a large amount of seed can be collected in a short time this way. Bunches of berries can be carefully removed using secateurs. But please take care not to remove any buds. This is where next years growth will begin. A stick with a hook can be used to bend branches within reach – but not too far or the branch might break!

Or let gravity do the hard work and collect from the ground! This type of collection is especially suitable for larger fruits, such as acorns, hazelnuts or crab apples. Again, timing is crucial, especially for hazelnuts. The first nuts to fall are often empty and mice will clear up any full ones very quickly!



Flowering and seed collection times

Common Name	Irish Name	Latin Name	Flowering Dates	Collection Dates	Collect when...
Alder	Fearnóg	<i>Alnus glutinosa</i>	February-March	October-November	Cones start to open
Ash	Fuinseog	<i>Fraxinus excelsior</i>	April	October	Seeds turn brown
Aspen	Crann creathach	<i>Populus tremula</i>	March	June-July	Seed pods open
Birch, downy	Beith chlúmhach	<i>Betula pubescens</i>	March-April	August-September	Bracts turn brown
Birch, silver	Beith gheal	<i>Betula pendula</i>	March-April	August-September	Bracts turn brown
Blackthorn	Draighean	<i>Prunus spinosa</i>	March-May	October	Fruits turn black/blue
Broom	Giolcach sléibhe	<i>Cytisus scoparius</i>	May	July-August	Pods turn black
Cherry, bird	Donnoisc	<i>Prunus padus</i>	May	August	Cherries turn black
Cherry, wild	Crann silíní fiáin	<i>Prunus avium</i>	April-May	July	Cherries turn red
Crab apple	Crann fia-úill	<i>Malus sylvestris</i>	May	October	Apples turn yellow
Elder	Tromán	<i>Sambucus nigra</i>	May-June	September-October	Berries turn black
Gorse	Aiteann	<i>Ulex europaeus</i>	April-May	July	Pods turn black
Guelder rose	Caorchon	<i>Viburnum opulus</i>	June-July	October	Berries turn red
Hawthorn	Sceach gheal	<i>Crataegus monogyna</i>	May	September-October	Berries turn red
Hazel	Coll	<i>Corylus avellana</i>	February-March	September	Husk turns brown
Holly	Cuilleann	<i>Ilex aquifolium</i>	May	November-March	Berries turn red
Oak, pedunculate	Dair ghallda	<i>Quercus robur</i>	May	October-November	Acorns begin to fall
Oak, sessile	Dair ghaelach	<i>Quercus petraea</i>	May	October-November	Acorns begin to fall
Purging buckthorn	Paide bréan	<i>Rhamnus cathartica</i>	May-July	October	Berries turn black
Rowan	Caorthann	<i>Sorbus aucuparia</i>	May-June	August-September	Berries turn red
Scots pine	Péine albanach	<i>Pinus sylvestris</i>	May-June	September-November	Cones begin to open
Spindle	Feoras	<i>Euonymus europaeus</i>	May-June	October	Fruits turn pink
Whitebeam	Fionncholl	<i>Sorbus aria</i>	May	September	Berries turn red
Willow	Saileach	<i>Salix spp.</i>	March-April	May-June	Seed pods open
Wych elm	Leamhán sléibhe	<i>Ulmus glabra</i>	February-March	May-June	Seeds turn brown
Yew	Iúr	<i>Taxus baccata</i>	February-April	November	Berries turn red

Seed collection methods



Collect seeds directly from the trees. Bunches of berries can be removed with secateurs. Be careful to avoid damage to fingers or trees!



Use a long-handled hook to gently pull branches within reach....



....or ladders for those higher up.



Wash your hands after contact with seeds and fruits!



Pick cherry stones, acorns and hazelnuts from the ground before the mice and birds get them!



SEED PROCESSING



Extracted holly seeds

Seed processing is essential to:

- extract seed from fruits for storage and sowing
- prevent seed going mouldy during pre-treatment
- prevent damping-off (fungal contamination) after germination
- improve the regulation of seed moisture content during storage and pre-treatment

Seed groups

There are five different groups of seeds produced by our native trees and shrubs and each group requires processing in a different way. The five groups are:



Ripe hawthorn berries

Fleshy fruits (berries, cherries, apples)

These require the most processing to extract clean seed. Fruits can first be soaked to soften them, without letting them ferment, before being separated from the pulp by:

- Mashing: for large-scale operations (see page 11)
- Popping by hand: useful for small quantities of finger-sized fruits and seeds, e.g. hawthorn
- Pressing through a sieve: useful for small seeds that are easily damaged, e.g. rowan



Wild cherry fruits



Ripe guelder rose berries



Squashing rowan berries through a sieve



Hazelnuts

Nuts

Nuts can be removed from their husks, but this is not necessary unless a viability test will be carried out.

The viability of hazelnuts can be tested by placing the nuts (without their husks) in water. The ones that contain a lot of air will float. These are either empty or have only a small seed inside, which might not grow well. The full nuts will sink. These contain a healthy seed just waiting to grow. It should be noted though, that not all nuts that float are non-viable, so it may be worth keeping them all.



Wych elm seeds

Wings

Separate individual fruits from bunches and remove stalks and twigs. The outer fruit layer (the wing itself) is not normally removed from winged seeds.

These should then be pre-treated immediately in the usual way. Brown ash keys will not germinate until the second spring after collection. The seeds of wych elm should be collected in late May or early June and sown immediately in prepared beds or containers.



Ash keys

Pods

When these seeds are ripe they are almost fully dry and should be collected before the pods rupture. The pods can be laid out in layers or placed in paper bags and allowed to rupture in a warm, dry place. The seeds can then be stored cool and dry until time for treatment.



Gorse pods



Broom seeds and pods



Gorse pods drying and opening

Cones/Bracts

Alder and birch are collected just as the cones or bracts begin to turn from green to brown. At this time the seeds are still firmly held within the cones or bracts. Take care not to leave them in the collecting bags too long as they will begin to heat up and the seeds will start to die. As they dry and turn brown, the seeds are released. Place the cones or bracts in an open box (or large paper bag) and keep in a warm, dry place. As they dry, stir or shake them in the box or bag to dislodge the seeds. When completely dry, store in bags in a cool, dry place.



Downy birch seeds



Alder cones almost ready to collect



Drying birch seed

Extracting seeds from berries

1



Remove berries from bunches by hand

2



Mash gently with a flat-bottomed tool



3



Add some water and sieve one or two times to remove scum.



4



Direct a jet of water onto the seed mixture. The empty seeds will float and can be poured off with the remains of the berries. Repeat this a few times and you will be left with clean seed in the bottom of the bucket!



SEED PRE-TREATMENT



Pre-treatment containers

A dormant seed is one that is *known* to be alive, but does not germinate immediately after it is collected. Most of our native tree seeds are dormant and require some kind of treatment before they will grow. This is simple enough to achieve by providing a period of cold and/or warmth.

How long will it take?

Fortunately, nature takes care of the warm and cold temperatures for us. All that we need to do is to 'store' our seeds outside for the appropriate length of time. Our tree seeds show three different levels of dormancy - shallow, intermediate or deep. Some seeds, however, are not dormant!

To simplify things, we can separate the seeds into the following categories:

Not dormant - sow immediately	Store dry and pre-treat in the spring	Pre-treat and sow in the first spring after collection	Pre-treat and sow in the second spring after collection
Aspen Pedunculate oak Sessile oak Willow Wych elm	Alder Birch Scots pine Broom Gorse	Blackthorn Bird cherry Crab apple Elder Guelder rose Hazel Rowan Purging buckthorn Whitebeam Wild cherry	Ash Hawthorn Holly Spindle Yew

Non-dormant seeds

Seeds which have no dormancy should be sown immediately. If they are stored for any length of time, they will deteriorate rapidly. If they are pre-treated like dormant seeds, they will begin to grow during pre-treatment and prove impossible to sow successfully in the spring. Aspen, willow and wych elm, whose seeds ripen early in the year, will germinate and emerge straight away, often growing large enough to be planted out by their first winter.

Dormancy elimination

Depending on the level of dormancy we pre-treat seeds in slightly different ways. Some seeds can be stored dry during the autumn and winter, and pre-treated in the spring. Other seeds should begin their pre-treatment immediately after they are extracted. Regardless of the method, you should check seed being pre-treated regularly to make sure it is not too dry or too damp and to monitor any signs of germination.



Alder, birch, Scots pine, broom and gorse

These seeds are best stored dry once they have been extracted and pre-treated in the spring.

At the beginning of March, birch, alder and Scots pine seed is soaked for 24 hours in cold water and then drained. Mix with a little moist sand, place in a loosely tied plastic bag in the fridge for four to six weeks and then sow.

Gorse and broom behave quite differently. Remove from the fridge in March. Place the seed in a heatproof container and pour twice their volume of boiling water over them. Leave until the water is cool, drain and sow. This treatment breaks down the very hard seedcoat, allowing water and oxygen to get to the seed inside.

Blackthorn, bird cherry, crab apple, elder, guelder rose, hazel, rowan, purging buckthorn, whitebeam and wild cherry

As soon as you have extracted these seeds, they can be pre-treated following the method described in the box below. They will be ready to sow in the first spring following collection. Blackthorn will benefit from a four week period of warmth before being set outside. This can be achieved in a warm room! One word of warning about guelder rose. It begins to germinate in May and should be sown, but will not emerge above the ground for another year. Don't give up! Your patience will be rewarded.

Ash, hawthorn, holly, spindle, yew

These seeds are treated the same way as blackthorn above, but wait until the second spring before sowing. The period of warmth that they require is satisfied by the summer following collection.



Rowan seed mixed with compost

Follow these simple steps.....

Take equal volumes of an organic material, such as peat-free compost or leafmould, and a coarse medium, such as grit, coarse sand or vermiculite. Mix this together thoroughly.

In a bucket, combine your seeds with an equal volume of this mixture. Add enough water so that, when you take a handful and squeeze it tightly, only one or two drops of water escape. This is the ideal moisture content for the seed. Mix the seed and compost/sand mixture together.

Place all this in a suitable container, such as a plant pot. The container must have good drainage and be large enough to hold everything. Cover the seed mixture with 2-4cm of horticultural sand.

The container should be kept outside in a shady place. It should be exposed to natural conditions but must not be allowed to dry out or become waterlogged.

In early spring (the first or the second spring, depending on the species), check your seeds for signs of germination. Ideally they should be sown just as the root begins to appear.

.....to success!

RAISING SEEDLINGS

Collecting, extracting and pre-treating our seeds is only half the battle. Once the seeds begin to germinate, the young trees are dependent on us for their care - watering, weeding and feeding - to ensure good, strong growth. During their first years, our trees must be nurtured until they are strong enough to be planted into their final home.



Alder seedbeds

Seedbeds or pots?

If you have only a small number of seeds, growing in pots is probably the best option. For larger numbers of seeds, you will need to make seedbeds. Dig over the soil, incorporating manure or compost, firm and rake to a fine tilth. For pot-growing, soil-based composts or peat alternatives give good results, especially when a slow release fertiliser is added.



Gorse seedlings

Seeds are scattered on the surface of the soil or compost, firmed and covered. Horticultural grit is the best material to use to cover your seeds, but soil or compost will do. Ensure that the seeds are only covered to their own depth. Too deep and they may not emerge. Too shallow and they might dry out. Don't forget to label the seedbed or pots.

Growing on

It is vital that alder, birch and willow seeds are not allowed to dry out at all during the first three weeks after sowing. All other seeds should be kept moist. Before the seedlings start to crowd each other they should be thinned out or transplanted. Pots should be kept in a well-ventilated and well-lit position. Wide temperature fluctuations must be avoided. Don't forget to protect the seeds and young seedlings from birds and mice! Begin weekly liquid feeding when the first true leaves have grown and continue through to the end of July. Keep moist at all times. Inspect seedlings for pests and diseases. Weed regularly for best growth!



Keeping the young trees weed-free

Hardening off

Trees and shrubs, when grown indoors (in a greenhouse or on a window sill) need to be acclimatised to outdoor conditions. In late summer reduce liquid feeding and move the seedlings outdoors. Lower nutrients, cooler nights and shortening days encourage seedlings to become dormant.


Planting your trees

Once our trees are about 30 or 40cm tall, after one or two years, they are ready to be planted into their final home. Plant to the same depth as they were previously growing and keep well watered, fed and weed-free. You have now played a vital part in protecting the trees of our future. **Congratulations!**



Useful definitions

Berry	A fleshy fruit, containing one or more seeds.
Bract	Multiple-seeded fruit with catkin-like structure (e.g. birch).
Fertilization	The union of the male pollen grain nuclei with the female nuclei of the ovules.
Germination	Growth of an embryo resulting in its emergence from the seed.
Involucre	Bracts forming a husk around or just below the base of a fruit.
Mast	Term used to describe tree fruit crop.
Native	Not known to have been introduced by humans.
Nut	Fruit with a bony, woody, leathery or papery pericarp; usually one-seeded and partially or wholly enclosed in a husk (involucre).
Origin	Place in which an indigenous stand of trees is growing, or the place from which a non-indigenous stand was originally introduced.
Orthodox seeds	Seeds that can be dried and stored.
Peduncle	The stalk of an inflorescence or fruit.
Pericarp	Outer structure of maturing fruit.
Periodicity	The interval (in years) between heavy seed crops.
Pollination	The transfer of pollen from the stamens to the pistils.
Provenance	Place in which any stand of trees, whether indigenous or non-indigenous, is growing.
Recalcitrant seeds	Seeds that cannot be dried below a critical moisture content without seriously damaging or killing them.
Samara or 'key'	A dry fruit with a 'wing' distributed by the wind.
Seed	A matured ovule containing an embryo and nutritive tissue enclosed by a protective seedcoat, which is capable of developing into a plant under suitable conditions.
Seedcoat	The protective outer layer of a seed.
Stratification (pre-treatment)	Term used to describe the simulation of natural conditions to overcome the dormancy of tree seed.
Viability	The presence in a seed of tissue which, provided the appropriate dormancy breaking treatment is experienced, will lead to its germination.



This handbook is designed as a follow-up to an *Autumn Seed Harvest Workshop* that you may have attended with *Conservation Volunteers Northern Ireland*.

Although there is no substitute for doing the practical procedures yourself, these notes will hopefully act as reminders on the various stages of growing trees from seed.

Remember! Given the right conditions, trees grow without any human intervention at all. We hope that by following this guide you will be able to maximise your tree propagation potential and be encouraged to grow more *Trees of Our Future*.



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