



How-to-guide

Traditional Orchards and Fruit Trees for Pollinators on the Farm

**National
Biodiversity
Data Centre**
Documenting Ireland's Wildlife



**All-Ireland
Pollinator Plan**
www.pollinators.ie



Implementation coordinated by the

National Biodiversity Data Centre



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture
Food and the Marine

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**Irish
Seed Savers**



What are traditional orchards?

Small orchards have in the past been a feature of many farms across the island of Ireland, providing traditional varieties of apples, pears, plums and damsons. The crop was sometimes destined for local sale or for use in the home.

Traditional orchards became popular around the 17th century and usually consist of five or more fruit trees grown on vigorous rootstocks, often crab apple seedlings, and widely spaced trees with crown edges less than 20 metres apart. They are lightly managed and the orchard floor below the trees is usually meadow grassland and is either grazed or allowed to grow and cut for hay.

Fruit trees are mostly planted for their crop but can also enhance the farm as they are great for pollinators. In an orchard, they create a mosaic of trees, with grasses and wildflowers that are perfect for biodiversity. The fruit trees tend to age quickly and become home to a range of insects, birds, bats, mosses and lichens. Windfallen fruit is a vital source of food in autumn and winter for a whole range of wildlife.

Pollinators like wild bees have a vital 'pollination service' role in orchards, with almost all fruit resulting from pollination by a bee or other insect. In turn, fruit trees provide nectar and pollen, essential for the survival of these important insects.

Why are traditional orchards in trouble?

Traditional orchards comprising heritage trees contain the last surviving samples of rare local varieties that have co-evolved with native wildlife. Most of our traditional orchards on the island of Ireland have been lost due to neglect, development, or conversion to intensive modern orchards, which can have a negative impact on biodiversity. In 1791 there were 7,136 acres of orchards in Ireland, whereas a DAFM/Bord Bia survey of orchards in 2017 showed 1,761 acres of land under orchard – a 75% reduction.

Traditional orchards are fantastic for wildlife as they are made up of several habitats, including elements of woodland, hedgerow and meadow grassland. This mosaic of habitats is home to a range of biodiversity, including bumblebees, butterflies, birds, bats and beetles. This unique way fruit trees age creates an indispensable habitat for a wide range of interesting species.



How to use this guide

This how-to guide will help you learn how to create and manage orchards and fruit trees for pollinators on your farm, garden, or other areas of land.

If you are planning to create a new orchard, you will find guidance on how to do this on page 4. If you already have an orchard on your farm, it is a valuable habitat and it's important to protect, manage and restore it where needed. You can find guidance on this on page 8.

The apple tree story

There are 6,000 different varieties of apple tree in the world. The ancestors of apples as we know them today came from Kazakhstan. They naturally moved along the Silk Road and were then spread further by the Romans.

Apples have been grown in Ireland for almost 3,000 years and the presence of orchards are reflected in placenames throughout the country such as Oulart (Wexford) and Knockullard (Carlow) derived from abhal ghort – apple garden. There are records dating back to early Christian times that reference apples, including in the 11th/12th century *Vision of Mac Con Glinne*:

A row of fragrant apple trees
An orchard in its pink-tipped bloom
Between it and the hill
A forest tall of real leeks
Of onions and of carrots stood
Behind the house

DNA fingerprinting and analysis work (2022) conducted by Irish Seed Savers <https://irishseedsavers.ie/apple-tree-conservation/> has confirmed circa 200 different Irish heritage varieties, each with their own unique history, some dating back as far as 500 years.

Many fruit varieties have historical associations with places and people throughout Ireland, for example the Lough Tree of Wexford, Cavan Sugarcane, Rose Hogan and Finola Lee. Some have been bred or discovered in an area and are named after the place they came from, or by the person who discovered or raised them such as McGrigor's and Douthwaite's. Other varieties were particularly popular in certain areas such as the Ballyvaughan Seedling that is widely grown on the Atlantic coast, especially in Co. Clare

It is important to conserve these heritage varieties as a genetic resource and from a future food production/ security point of view.



How to create a new traditional orchard for pollinators

Choosing the right place

When choosing a site for your new orchard, make sure you avoid any protected habitats or habitats which already have a high biodiversity value such as species-rich grassland (meadow grassland), wetlands, and long-established native woodland.

Survey your potential site to check the size of space you have available and decide whether the change in land management will be suitable.



Tip: Stand where you are considering planting – observe where the sunlight falls, the wind blows and the air moves. Observe frost pockets during frosty times especially late spring (April/May) and again make observations when gales blow.

Choose a site that is warm, sunny, and sheltered from strong winds. The site should preferably be south to south-west facing. Ideally the soil will be slightly acidic to neutral, well drained, uncompacted, and loamy. Avoid frost pockets or standing water. Consider spacing (around 5 to 7 metres apart) between trees and the layout of your orchard.

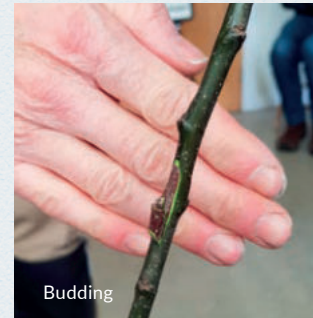
Choosing your varieties

Find out which varieties are local to you and consider choosing these for your orchard. Trees grow best in places where they originated, and you will also be helping to conserve cultural and genetic diversity.

If your orchard already contains a local or rare variety, consider maintaining it by grafting onto a suitable rootstock.



Grafting to a rootstock



Budding

Both Irish Seed Savers and The Organic Centre run courses that teach grafting techniques as well as other orchard management skills such as pruning and budding.

Irish Heritage varieties examples

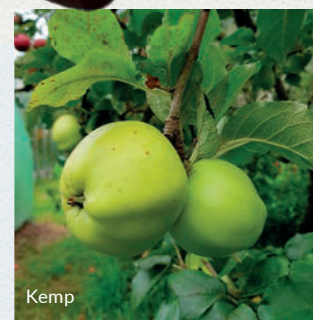
- Ballyvaughan Seedling (Self-rooting Cooking)
- Leitrim Red (Cooking Apple)
- Lough Key Crab (Roscommon Crab and Jelly Apple)
- Cavan Strawberry (Cooking apple)
- Kilkenny Pearmain (Eating apple)
- Irish Peach (Eating apple)
- Kemp (Eating apple)



Lough Key Crab



Leitrim Red



Kemp

Also see the DAFM list 2022 for ACRES (Agri-Climate Rural Environment Scheme), Appendix 1.

Other varieties of traditional fruit

- Pear – Conference
- Cherry – Morello
- Plum – Victoria, Damson, Young River, Green Gauge and Horse



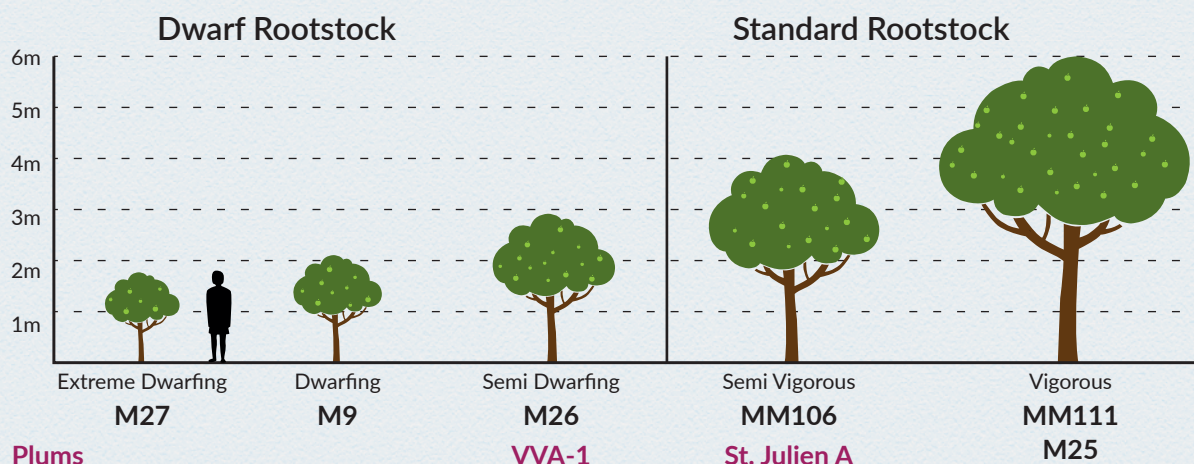
Idea: Visit a local ‘Apple Day’ or ‘tasting tour’ event to see and try different apple varieties, to learn about the varieties of heritage apple trees and help you decide what varieties you like. They’re usually held between August to October.



Choosing the right tree

Decide what you want and what will suit your site:

- ✓ The rootstock will determine the tree size, e.g. MM106 or MM111 are for vigorous trees found in traditional orchards, see diagram below.
- ✓ Decide if you want eating, cooking or cider heritage fruit trees.
- ✓ Choose a mixture of trees to flower early, mid, and late in the season, to have some fruit to harvest throughout the autumn. This will help support pollinators throughout the year.
- ✓ Decide if you want a bare root or potted tree. Bare root trees are available when they are dormant (between November to early April) and planted in the autumn. A potted tree can be planted at any time of the year.



Source: Irish Seed Savers

Pollinators in action

- ✓ Whichever variety of apple you choose it will need to be pollinated by another apple tree to produce a reasonable crop. If there are apple or crab apple trees growing locally, they should be able to pollinate your orchard. If you live in a remote area with no other apple trees nearby, you will need to plant several trees to ensure a good crop.
- ✓ When choosing apple varieties, there are three flowering groups; early, mid and late season that you can choose from. All apple trees fall into one of several flowering groups depending on how early in spring the blossoms emerge. Choosing varieties from the same flowering group or adjacent groups will ensure that bees and other pollinators are able to visit the flowers on both trees – allowing pollination to take place and resulting in a good crop of apples.



Planting your trees

- ✓ Plant your trees in the autumn to allow the roots to settle in before spring.
- ✓ Dig a square hole, wider and deeper than the tree roots.
- ✓ Place a round tree stake on the windward side of the tree.
- ✓ Add some mycorrhizal root powder and well-rotted manure to the tree pit.
- ✓ Plant the tree at the same soil level it has been grown at. Fill around the tree root, firming the soil down gently. Secure to the tree stake and water well.
- ✓ Spread a layer of mulch around the newly planted tree. This will help keep moisture in and suppress weeds.
- ✓ Guard from animal browsing (including rabbits) and protect from grass cutting machinery.



Caring for your fruit trees

Healthy fruit trees in a healthy orchard will be less prone to pests and disease.

For tree health and cropping, the addition of nutrients is generally not necessary. Indeed, the addition of nutrients can damage the mycorrhizal associations between the tree roots and the soil fungi which help provide nutrients and water that the roots of the tree can't access on their own. They also protect the roots from attacking fungi and bacteria.

If the mycorrhizal associations are broken, your tree will be much more dependent on fertilisers until the relationships have re-established.

Water stress and weed competition

It's important to reduce weed competition directly below the tree to help reduce water stress in newly planted young trees. This can be achieved by adding a mulch around newly planted trees, maintain the mulch for a few years, until the root systems are established.

Pests and disease

Orchards can be susceptible to common fruit tree diseases. They can be kept under control by pruning and removing the affected branches or leaves. It's good practice to check your trees and act at the first stages of infection.

Encouraging biodiversity in your orchard can provide natural defences against pests.

Tips for maintaining your new orchard:

- ✓ Frequently check the tree stakes, loosen tree ties if necessary.
- ✓ Keep 1 metre weed free around the tree for the first 3-4 years.
- ✓ Add mulch around the base of the trees each year.
- ✓ Pruning - this is very important in year 1 to 4 of your new fruit tree and will depend on the tree variety and space available.
- ✓ Generally, prune pip fruits (apples and pears) in the winter and stone fruits (plums and cherries) in the summer.
- ✓ Check if your apple tree bears fruit on spurs (short shoots that sprout on older wood) or is a tip-bearer (fruit at the end of long shoots that were produced the year before). This will help you to avoid accidentally removing all the shoots that will produce next year's crop.



Agri-environmental schemes

The Department of Agriculture, Food and the Marine has included the planting of traditional orchards as part of several Agri-environmental schemes. It's first scheme the Rural Environmental Protection Scheme (REPS) launched in 1994 contained a supplementary measure for Traditional Orchards and this has continued right to the current ACRES. Consult with your local farm advisor for information on current schemes.

Managing existing orchards

If you have an existing orchard, it is already a valuable habitat supporting your local biodiversity. It may also have genetic diversity and be an important piece of cultural heritage if it contains traditional varieties. For all these reasons, it is important to retain and restore an existing orchard.

- ✓ If suitable, restore veteran fruit trees with careful pruning.
- ✓ If there is space, add suitable replacement fruit trees.
- ✓ Graft onto new rootstock and increase the varieties that are present using scions.



Managing orchards for pollinators

Traditional orchards can be a haven for pollinators and biodiversity, especially if they have species-rich grassland beneath the trees. This habitat contains the native, naturally occurring wildflowers that our pollinators have evolved alongside, and are the best source of pollen and nectar.

Pollinators need pollen and nectar throughout the nesting season (February to late September). The blossom from fruit trees provides them with a vital early source of food when they emerge from hibernation in the spring.

After the blossom is over, pollinators will depend on flowers beneath the trees and in the hedgerows and margins around your farm. They need these food sources right through to the end of the summer to ensure they can complete their lifecycle.

By managing hedgerows, field margins and non-farmed areas in and around your farm you can support more pollinators, boosting pollination and fruit yields. Here are a few tips:

1 Make your hedgerows pollinator friendly.

Hedgerows can provide vital areas of food for pollinators from early spring through to late autumn. Hawthorn/Whitethorn and Blackthorn will provide important food in spring. You can also add Dog rose, Guelder rose, Honeysuckle and Holly to an existing hedgerow. Add pollinator friendly native trees like Willow, Rowan, Crab apple or Wild cherry to your hedgerow or plant a small group nearby.

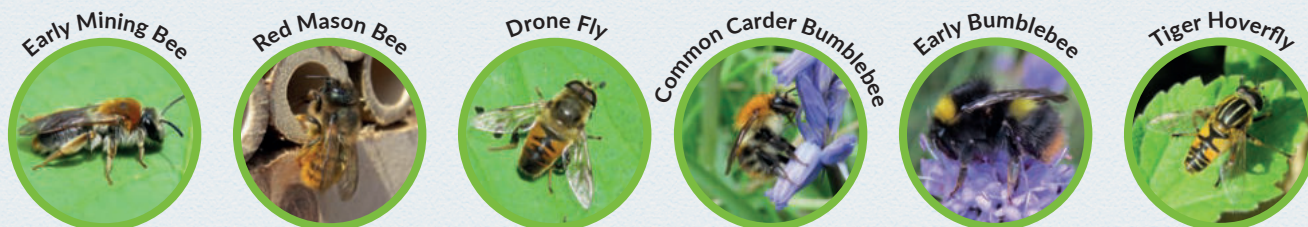


- 2 Allow native wildflowers to bloom** in the grassland below the orchard. Manage as a meadow, cutting and lifting the grass at the end of the summer. If grazing lightly, the trees will need to be protected.
- 3 Allow Ivy and Bramble to grow** around the farm. These plants provide an important food source in late summer and autumn for pollinators. For example, Ivy flowers provide Queen bumblebees with a critical late food supply, to help her build up her fat reserves to see her through hibernation over the winter.
- 4 Leave some fallen fruit in autumn** as it provides food for bees, butterflies, moths and hoverflies. Birds love them too.
- 5 Provide nesting sites for pollinators.** Areas of tussocky grass in warm sunny locations, are perfect for bumblebee nests. Create a bee bank for solitary bees. If you have a hedgerow that has an earth and/or stone bank they provide ideal nesting and overwintering sites for mining solitary bees, particularly if they are south facing. Ponds and ditches, with marginal and submerged native plants are good, as some hoverfly larvae live in water. Keeping the water clean is essential, so make sure silt, fertiliser and pesticide run-off cannot enter ditches and ponds.
- 6 Leave dead and decaying wood**, provided it is not diseased. Standing deadwood is a very valuable habitat to insects, including some hoverfly, whose larvae eat rotten wood and fungi.
- 7 Be careful with pesticides.** It is possible to manage traditional orchards organically by practicing good husbandry to mitigate the risk of damage from pests and disease (see page 7). Pesticides (insecticides, herbicides, and fungicides) can harm pollinators directly and indirectly. If you need to use a herbicide, spot treat only, or consider an organic alternative.
- 8 Create wildlife corridors.** Connect your orchard with other habitats like hedgerows and woodland, shrub and unimproved grasslands to provide corridors for pollinators and other wildlife. These habitat networks will allow them to move safely around farmland.

What to spot in your orchard

Common pollinators

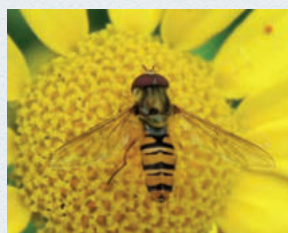
These species are examples of key pollinators you might find in your orchard, helping provide a good crop.



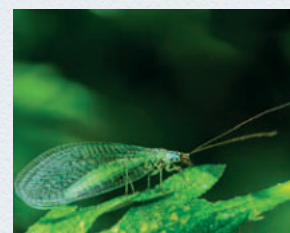
Beneficial predators

Traditional orchards support a wide variety of organisms including predator species who prevent damage to the crop by managing pests.

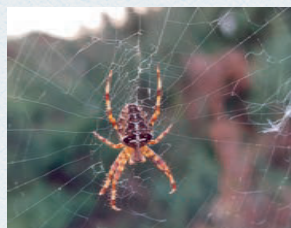
To help our vital pollinating insects and other biodiversity, encourage these natural predators instead of using harmful pesticides.



Hoverflies
Larvae feed on: Aphids



Lacewings
Larvae feed on: Aphids



Spiders
Feed on: Adult, nymph and eggs of pest species



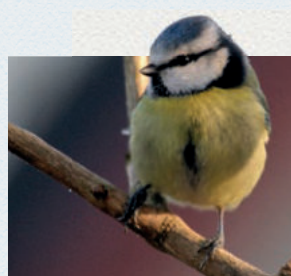
Parasitic wasps
Feed on: Caterpillars, sawflies, leaf midge, aphids and ants



Ground beetles
Feed on: Slugs, snails, sawfly larvae and moth caterpillars



Earwigs
Feed on: Aphids, scale insects and Codling moths



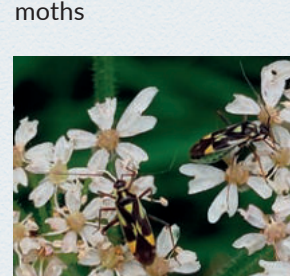
Birds
Feed on: Aphid and caterpillar species



Bats
Feed on: Moth species, including Codling moth



Ladybirds
Feed on: Aphids and the larvae of other insects, particularly caterpillars



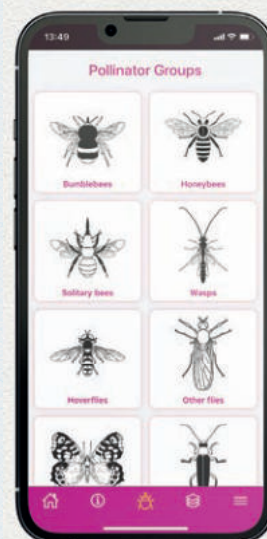
Predatory bugs
Feed on: Aphids, Codling and Tortrix moth eggs and caterpillars

Monitoring the pollinators in your orchard

Flower-Insect Timed Count (FIT) Count

You can track your progress and help monitor the progress of insects in your orchard by watching a 50 x 50 cm patch of flowers in your orchard for 10 minutes and recording how many insects visit. This FIT Count survey is quick and easy to do and doesn't require specialist knowledge of insects. <https://pollinators.ie/record-pollinators/fit-count/>

You can download the app <https://ukpoms.org.uk/fit-count-app> which can be used in the Republic of Ireland and Northern Ireland.



Put your orchard on the Map!

The All-Ireland Pollinator Plan's online mapping system tracks actions for pollinators across the island. Please add your pollinator-friendly orchard to our map at: <https://pollinators.biodiversityireland.ie/>

Find out more:

Irish Seed Savers <https://irishseedsavers.ie/>

The Organic Centre <https://www.theorganiccentre.ie/conservation/orchard>

The Orchard Project, UK <https://www.theorchardproject.org.uk/>

The Traditional Orchard Project UK (PTES) <https://ptes.org/campaigns/traditional-orchard-project/>

RHS Pollinator groups <https://www.rhs.org.uk/advice/beginners-guide/fruit-basics/fruit-pollination>

Appendix 1: Department of Agriculture, Food and the Marine (DAFM), Planting a Traditional Orchard, ACRES (Agri-Environment Rural Development Scheme) specifications 2022.

List of tree varieties for planting a Traditional Orchard

Aherne Beauty	Cavan Wine	Horses Head	Richardson
An Cailin ban	Clearheart	Irish Molly	Rose Hogan
Appletown Wonder	Councillor	Thompson's Apple	Ross Nonpareil
April Queen	Custard Scarlet	Irish Pitcher	Sam Young
Ard Cairn Russet	Davy Apple	Keegan's Crab	Scarlet Crofton
Ballinora Pippin	Dick Davies	Kemp	Sheep's Snout Red
Ballyfatten	Dockney	Kerry Pippin	Sovereign
Ballyvaughan Seedling	Ecklinville Seedling	Kilkenny Pearmain	Strippy
Bardsey Island	Eight Square	Kiltoghert Blossom	Sweet William
Barnhill Pippin	Eves Apples of Ireland	Knights Templar	Irish Peach
Beauty of Ballintaylor	Farrell	Lady's Finger	Turkey Willouby
Belvedere House	Finola Lee	Leitrim Red	Uncle John's Cooker
Blood of the Boyne	Frank's Seedling	Leixlip	Valentine
Bloody Butcher	Gibbon's Russet	Lough Tree of Wexford	White Crofton
Brady	Gibby's Apple	Martins Seedling	White Moss
Brown Crofton	Glenstal Cooker	Mrs Perry	White Russet
Buttermilk Russet	Golden Royal	Munster Tulip	Widow's Friend
Cabbage Stalk	Greasy Pippin	Pêche Melba	Yellow Clare
Cavan Rose	Green Chisel	Rawley's Seedling	Yellow Pitcher
Cavan Strawberry	Harvest Eve (Culleton)	Red Brandy	
Cavan Sugarcane	Honeyball	Reid's Seedling	

Crab Apples
Cavan Sweet (Crab)
Lough Key (Crab)
Mc Grigors (Crab)

This booklet is one of a series of Guidelines produced to help different sectors take actions under the All-Ireland Pollinator Plan. For more information and other useful resources, please see www.pollinators.ie



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About the National Biodiversity Data Centre

The National Biodiversity Data Centre is a national organisation that collects and manages data to document Ireland's wildlife resource, and to track how it is changing. See maps.biodiversityireland.ie

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agus Fiadhúlra
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