**Planting fruit trees**

Whether you are 'gapping up' or planting an orchard from scratch, it is important to get tree placement and planting right.

**Planning a new orchard**

Laying out a new orchard takes some thought and advance planning. Before reaching for the spade, take the time to consider all the factors that will affect your orchard, from the sub-soil to the lay of the land and up to the surrounding features. In the first instance, work out how many trees you can fit into the space you have bearing in mind how big the trees will be when mature. Once you have this figure and have chosen your varieties, you can use the other factors to adjust your plan.

The lowest part of your orchard is underground. There may be areas liable to waterlogging or drying, have compacted soils, or the topsoil may be thin, or there might be buried rubble or footings left over from buildings. Dig a few exploratory holes to get a feel for the subsoil. Some rootstocks are better suited to very wet or drought-prone areas. The next layer is at ground level. The changes in plant structure will give you clues as to what’s occurring above and below the ground.

Above ground, look beyond the orchard at the lay of the land. Beyond the obvious – over-shading, think in particular about frosts. Cold air is heavier than warm, so frost and mist travels downhill and accumulates on flat or depressed ground. If you are on an incline at all, make sure the lowest part of the ground is not thickly hedged or walled as this will literally act like a plug stopping the cold air draining away from the area. A southwest facing slope is ideal as this protects the orchard from the earliest rays of sun (rapid thawing exacerbates frost damage), and gets the best of the daylight year-round. If the ground forms a valley, leave an alleyway through the lowest part as this will also be liable to the heaviest flooding.

The pattern of laying out an orchard is a vast subject, but in a traditional planting (i.e. not rows of dwarf trees) a grid of some sort makes the most of the available area. A once-popular planting pattern is the quincunx which, as the name suggests, involves five trees planted like the layout on a die. The nearest trees are on the diagonal plane, which allows more per hectare than a straight grid. This can be left in situ throughout the life of the orchard as it has an aesthetically pleasing symmetry, but the design also allows for the tree in the middle to be removed when the trees start to get crowded. If this middle tree is planted on a dwarfing rootstock, it can give an early crop whilst the other four trees on more vigorous rootstock mature.

**Selecting varieties**

It is worth spending a bit of time over the selection of varieties. Each ripens at a slightly different time so the chief concern is to spread the ripening across the season. Among the thousands available there will be something for every taste and need. Aim for a ratio of about 1:3:6 of early mid and late varieties respectively as the earlies, although often the most tender and juiciest do not store. They give a glut of fruit that lasts a couple of weeks and they’re all over. The early-mids to mids can fill the gap until the lates are ready. In the case of apples and pears, if stored in a cool dark place these will keep almost until they come again the following year. Our varieties database can filter varieties by name, region of origin, use (eaters, cookers, juicers and cider), and season.

**Tree spacing**

Whether you’re planting a new orchard or replacing dead trees, there are a lot of things to consider beforehand. A new orchard should be carefully planned and laid out. If you are planting trees in gaps in your orchard, known as ‘gapping up’, it is best to follow the original or existing tree spacing and pattern. Traditionally orchards were planted in rows or sets which makes it easier to map your trees as well as allowing for easier mowing and fruit collection and means each tree receives an even amount of sunlight. However, it is not recommended that you plant in the exact site of a dead tree as this can cause ‘replant disease’ which can seriously slow the growth of the new tree. To maintain the pattern plant slightly to the side of the old tree location, replicating the offset for each replacement tree. Planting stone fruit in place of pip fruit or vice versa avoids this issue.

It might seem excessive when you are planting young trees, but full sized standards need about 10m between them. This allows for enough light and air penetration to each tree and reduces the susceptibility to and spread of pests and diseases. Larger fruit trees like perry pears will require the farthest spacing as they can grow to a significant size when mature.

**Tree storing**

When you buy a buy a maiden tree it will usually arrive bare-rooted and in a dormant state, which is the best time to transport and plant it. However, if you can’t plant it straight away then they will normally be fine in half a bucket of water for a week. If you need to wait any longer than this it is best to ‘heel it in’ at a temporary position in the ground or a pot.

**Tree planting**

Bare-rooted trees should be planted while dormant, generally between November and March. Avoid planting during a drought, hard frost or when the soil is waterlogged. Don’t pre-dig holes as they can fill with rain in the interim.

If you’re unsure of the draining or water retention qualities of the land, dig a small test hole a couple of spits deep, penetrating the subsoil, and pour in a bucket of water. If the water drains very quickly, perhaps less than a couple of minutes, then there is a risk of the roots drying during drought. If the water takes more than 15 minutes to drain, the soil is likely to become waterlogged after heavy rain. In either case your planting hole and surround will need soil improvement in the form of John Innes no.3, a quality top-soil or, in the case of heavy clays, gravel or sharp sand will help. Mix it into the bottom of the hole and all around, breaking the soil up. A good method of soil preparation is to grow potatoes on the planting site the year before as this very efficiently breaks up the soil structure and you will become very familiar with your soil type.

Prepare the ground by removing all the grass and weeds in a one metre diameter as they will seriously slow down tree establishment. Take special care to remove strong, greedy plants like dock, dandelion, buttercup and couch grass. Dig a square hole and break up the sides of the hole with a fork.

Fruit trees generally come in two forms, bare-rooted or potted and these need to be treated slightly differently when planting out. See the detailed sections below.

Support is required in the first few years for vigorous and semi-vigorous trees, and for the lifetime of trees on the most dwarfing rootstocks. This can be a stake, wires or a solid construction like a wall. The cheaper alternative of a stout cane will often suffice, ideally inserted at a 45° angle and directed into the prevailing (SW) wind, but these require more maintenance as they can work loose, and will have to be replaced frequently. Two canes at 90° to each other is more satisfactory. Staking is particularly important if planting in a windy or exposed site. Drive stakes and canes into the ground before planting to avoid damaging the roots. Secure your tree so that it doesn’t sway in strong winds which can open a hole around the base of the tree and compact the soil. In extreme cases this can lead to tree death. Make sure the tree won’t rub against its support. Check ties frequently and adjust as necessary – this is important to remember as it’s an oft neglected job, particularly after two or three years when everything looks like it’s growing away well and we become complacent.

Adding compost, manures or fertiliser to the hole encourages roots to grow strongly within the high-nutrient soil rather than seeking out nutrient and a permanent water source away from the tree base, so it is only necessary if you know the soil is exceptionally poor. Use a slow release product such as blood and bone. If planting into a grass sward, lay the removed turf upside-down in the bottom of the hole (but pull out couch grass roots and strong perennial weed roots). Backfill preferentially with topsoil rather than subsoil, particularly around the roots.

Trim any long or damaged roots to the edge of the hole to avoid bending them around the edge of the hole. Bent roots can end up going round and round inside of the hole rather than growing outwards. Similarly, check the roots carefully and remove any that have circled within the pot. Tease them out to check and if your tree doesn’t arrive bare-rooted carefully shake existing potting compost off, away from the planting position, to check for vine weevil larvae – even the best nurseries suffer from vine weevil.

Applying mulch around the base of your new tree will add slow release nutrients, reduce weed competition and also retain soil moisture.

Fruit trees do not do well in boggy or shaded areas so whether you are planting bare-rooted or potted trees, avoid planting on ground that is regularly wet or shaded, and do not plant near to other large established trees.

**Planting bare-rooted trees – maidens or whips**

If you are planting a bare-rooted tree it is best to make sure it is well watered before planting by soaking in half a bucket of water for a few hours.

The tree should be replanted at the same depth as it was in the nursery bed. Look for a soil line or where the bark gets darker. If you accidently plant below the graft line then the scion stock can grow roots and will eventually take over from the rootstock. Spread the roots around evenly and hold the tree upright in position as you carefully backfill the hole making sure to fill between and around the roots. Firmly pack soil to exclude air pockets but not to the point of compaction.

When planting young trees like maidens or whips, you can minimise soil disturbance and compaction (and effort) by planting your tree in a simple notch. Cut an ‘X’ or ‘L’ shaped notch in the soil with a spade, insert the roots of the tree, then firm the soil back around the roots. This is only suitable if you are sure the soil is satisfactory and the roots are small.

**Planting potted trees**

If you are planting potted trees you can, in theory, plant out at any time of year but planting in the summer means breaking a lot of rules.

Make sure your potted tree is well watered before you even take it out of the pot. This will reduce the damage to the roots. If you are planting in winter or early spring when the tree is dormant then you can tease out the root system to ensure the roots don’t continue to grow in their pot-shaped root ball. Continue much as for bare-rooted trees. If you absolutely must plant a tree in leaf, do not tease out the roots but instead plant directly into the ground. Young and active roots are very fragile and you will do more damage than good, but this means you are filling the hole with potting compost, and can’t check for circling roots or vine weevil.

Planting in this way means that you effectively have a pot plant sunk into the ground so it will dry out quickly. Treat it like any other potted plant for the first few years until you are confident the roots have spread beyond the original compost. Water well for a few summers until established. This is only suitable for good soils. If you try this in heavy soils the roots will never break into the surrounding soil and the planting hole will fill with water.

**Fencing and protecting**

If there are rabbits or deer in your area, then your trees will need protecting from day one as they will find and eat the bark from your young trees. This is especially problematic in the winter. The best protection against rabbit damage is plastic spiral tree guards which can be purchased quite cheaply. Once the tree is a few years old the guard can be removed as rabbits only tend to go for the bark of young trees, also because these guards can create an artificially damp environment around the main stem that could harbour infection or damage the graft union.

If you have livestock in your orchard you will need to fence off your trees accordingly. Sheep can strip the bark of even mature trees given the opportunity. This is mainly a problem in autumn when the grass is less sweet, and the spring when the sap rises full of sugars. Mature trees can be protected from sheep with a wrap of chicken wire, allowing it to overlap itself and fixed in a way that allows it to be adjusted in the future. If you have young trees it is best to properly fence them off with wire mesh between three posts around the tree.

Cattle grazed orchards require sturdier and more extensive tree protection. Four posts driven into the ground in a square around the tree with wire mesh between the posts as well as a strip of barbed wire should be sufficient. Cattle are heavy beasts, and will knock over young trees and insufficiently driven in posts if they lean against them.

Cattle will graze on lower branches of fruit trees, so only orchards with full sized standard trees with high enough established lower branches are suitable for grazing by cattle.

**Aftercare**

It’s important to keep the vegetation down around the base of the new tree while it establishes to reduce the water and nutrient competition. Aim to keep a 1 metre diameter circle of vegetation back from the base for at least the first 3 years, a thick layer of mulch should achieve this as well as helping with moisture retention. There are lots of options here so pick a method that suits your scale of planting.

Young trees should be kept watered during the first year, especially during the summer if there are periods of low rainfall.



This information and other practical guides are available on the orchard pages of our website at [www.ptes.org/orchards](http://www.ptes.org/orchards)