A Basic Guide to Tree Planting

Coed Cymru
Welsh woodlands & timber

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Contents

Planting season (when to plant)

November to March for bare rooted trees. Planting is recommended for winter because this is when the tree roots are dormant and cope best with being moved. Do not plant if the ground is frozen or water logged. Container grown trees may be planted at anytime, provided the soil is kept moist.

Do Not Plant Trees in the Following Situations:

- Areas of existing natural conservation interest,
- Where there are underground and overhead services,
- Along traffic sight lines,
- Within close proximity to buildings.

Contact us if you are unsure about any aspects of tree planting and we will advise

Plant sizes and specifications for different woodland types

- Forestry planting stock is generally around 40-60cm tall but can be up to 1 metre.
- Hedging plants are usually somewhere between 30cm and 80cm depending on grade and species.
- Orchard trees and parkland trees will generally be around 1.2 to 1.5m tall. This gives a good sturdy tree, which can be worked to create various desired forms.
- Larger trees e.g. 1.2m can also be planted in specific cases, for example where bracken is a problem or you want a more instant result.
- Most native trees are planted bare-rooted as 1 or 2 year olds “transplants”. Some species need to be planted as pot grown stock, usually holly (Ilex aquifolium)
- Plants should be stocky and sufficiently “hardened off” to withstand local weather conditions.
- As a general rule the larger the tree, the more effort is needed to transplant successfully.
- As important as height is the general sturdiness of the transplant and the ‘root collar diameter' (the thickness of the stem at the base of the tree), which indicates the development of the root system.
- Nursery catalogues use a system of numbers and symbols to indicate the grade of plants and the age. “+” indicates a transplant (ie: the tree has been lifted and lined back out at wider spacing), this creates a sturdier tree. “u” indicates that while the tree has not been lifted and moved during the growing cycle, the roots have been undercut by a special machine to create a more favourable root system. So,

for example '1u1' means a tree that has been grown for 1 year, undercut and grown on for another year before lifting and sale. "1+2" would indicate a larger sturdier tree that has been transplanted after one year and grown on for a further 2 years. This sort of tree would usually be 1.2-1.5m tall, etc. Undercut and transplanted trees are usually worth the additional cost over the one year seedlings ("1+0") as they are sturdier and of better quality. There will be greater transportation and planting effort required, however, but longer term survival and growth usually outweighs the additional cost.

- For information on species tolerances under different site conditions please see http://coed.cymru/images/user/Coed%20Cymru%20Species%20and%20site%20tolerances_1.pdf

Caring for young trees *before and during* planting

Trees are robust once they reach maturity, but require care and attention before, during and in the first few years after planting. This is essential for successful establishment and saves time and money in the long-run as your main aim in planting to maximise overall survival. Plant your trees as soon as possible after receiving them. If you are not planting immediately (e.g. within a day or two of receiving them) store them in a cool place and out of any wind (e.g. in a shed or garage) in the packaging from the nursery.

Do not *expose roots to the air for longer than absolutely necessary. This (and lack of weeding) is the usual cause of failure. It is very unusual (and almost impossible) for the 'trees to be dead when they reached you' from the nursery. Wind will dry out the very fine hairs that the tree needs for survival. If the roots have dried out, soak in water as soon as possible although this will not remedy serious cases of neglect*.

Do not *expose the roots to frost, though this is usually less important than wind damage and drying out.*

If you need to store trees for more than a couple of days, 'heeling' them into a trench is recommended.

- Dig a trench approximately a foot deep.
- Remove sharp stones.
- Make sure the trees are tightly tied in bundles (this helps prevent drying out).
- Place the bundles tightly into the trench.
- Re-fill the trench covering the roots completely, keeping the tips of the trees clear of soil.
- Firm down with the heel of your boot to eliminate air in the trench, paying particular attention to the middle of the bundles as these may remain exposed to the air.
- The objective is to keep the roots moist and frost free until ready for planting.
- Trees stored in this way should be fine for a couple of weeks, though early planting is still encouraged.

When planting always transport the trees in a plastic bag, removing one at a time.

Spacing

Planting Woodland

One hectare is 10,000 square metres, one hundredth of a square kilometre. It is 2.471 acres. The normal spacing for new planting of native mixed woodland is around 1,600 trees per hectare, about 2.5m apart. This will allow the wood to establish and be ready for thinning after approximately 15 years (link to woodland management doc).

For timber production 2m spacing is required to ensure that side branching is kept to a minimum. Higher densities have been tried, but 2m x 2m spacing (2,500 trees per hectare) is generally regarded as the optimum in terms of cost and return.

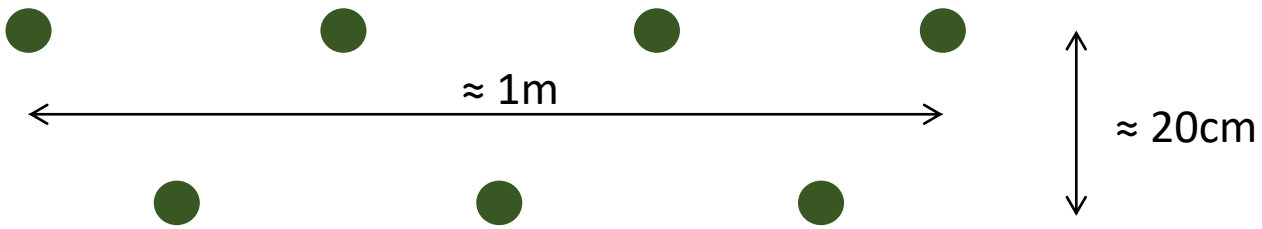
The table below shows the number of plants per hectare with different spacing:

Spacing	Example	Approx no of trees per hectare	Approx no/acre
25m	Parkland	16	6
10m	Farm orchard	100	40
8m	Farm orchard	144	58
6m	Orchard	256	104
5m	Dwarf fruit	400	162
4m	Amenity	625	253
3m	Amenity	1089	441
2.5m	Broadleaved	1600	648
2m	Conifers	2500	1012
1m	Soft fruit	10000	4047

Planting for: Hedges

The ideal hedge is planted in either one row approximately 6 inches apart or in two offset rows with plants a foot apart. Either way you will need around 5 plants per running metre. If you intend to lay the hedge at a later date, two staggered rows about 1ft apart will make the laying operation easier, as the plants will then cross over each other when pleached.

As a guide to numbers of plants required, a perfectly square one hectare field (2.471 acres) will measure 400 metres around its perimeter. You will therefore need 2,000 plants to enclose a square hectare at 6 inch spacing (1,400 per square acre) (5 plants per metre). A more rectangular field will need more hedging plants as more of the area adjoins the boundary. A good footstep by a person of average height is roughly a metre when measuring out. Glastir schemes may require more plants (up to 7 per metre) to allow for losses, but we regard this as unnecessary with proper planting methods and good quality stock.



Planting for: Shelter

This needs to be wider than a hedge, usually around 5 metres width. Plant at least two rows, offset. You are looking for a diffuse upper layer to slow the wind and a more solid lower barrier made up of shrub like plants.

Spacing will vary but expect a maximum of a metre between plants within the row and up to 3 metres between rows.

For a full guide to shelter belts click here.

Planting Methods:

Pit Planting (for container or bare rooted stock)

This method is a slow method but has the highest success rate. It is used for small numbers of usually larger specimen trees, or fruit trees.

Method:

- dig a hole to accommodate all roots easily
- In very large pits fork over base to loosen the soil.
- Backfill with topsoil only apply leaf mould, or well-rotted compost etc to the surface. Ensure the soil is firm around the tree roots by pressing down with your boots. Replace turf.

Slit or notch

This is a quick efficient method and the usual method for planting of larger numbers of bare rooted trees up to 2 or 3 years old.

Method:

- Make a vertical ‘’T’ or ‘L’-shaped cut with a spade deep enough for the roots.
- Lift up on the second slit and insert stem deeply.
- Remove spade, tread to firm gently.
- On very wet land take a square of turf, invert and plant through that to raise the plant a little above the water table.

DO NOT

- Plant in frozen or waterlogged soil.
- Leave transplants exposed to sun, frost or drying winds even on a rainy day. Fine roots die in minutes.

- Keep in black bags exposed to the sun.
- Keep in water as the soil will wash from the fine root hairs. Water can stagnate.
- Drop or throw bags as the roots will be damaged.
- Stack bags on top of each other.
- Keep in warm vehicle, etc.

If it is not possible to plant immediately heel into trenches to cover all roots completely.

Planting Methods: cell grown or root trainer trees

- Plant in a slit as for bare rooted trees or use a planting corer to prepare a hole.
- Plant so that compost is half an inch below soil surface
- Crumble loose soil to cover the compost.

Stakes and Ties

Stakes

- Use oak or sweet chestnut.
- Keep short and use on windward side.
- Insert before planting where possible to avoid driving stakes through the roots.
- Trim off **below** the top of tree shelters in order to prevent stakes rubbing the stem of the tree.

Ties

- Do not use wire and plastic baler cord as these do not expand with the tree.
- Check regularly and do not allow to chaff or constrict.
- Buckle ties can be loosened as the tree grows.

Tree Protection

The survival of planted trees relies heavily on care and protection paid to them.

Protection is needed because young trees are readily eaten by deer, cattle, horses, sheep, hares, rabbits and voles.

Protection maybe provided by: tree shelters, spiral guards, mesh guards, timber enclosures, trapping squirrels

Tree Guards

- Are mainly to prevent damage by rabbits.
- They also help locate trees when weeding and to protect from spray.
- Are made in heights from 0.6 - 1.8m and in different colours.
- We recommend using spirals with holes to aid ventilation. This is important with some species, eg oak.
- Use sturdy canes, especially in windy locations. '12-14 lbs' grade are best for 3ft canes.
- Green mesh guards are a good option for shrubs, conifers and some fruit trees.

Very few plastic guards will provide any protection from sheep or other grazing livestock.

Timber enclosures

- Protect individual trees among livestock.
- Must be wide enough to keep trees out of reach of cattle, horses and deer.
- The designs and materials vary but an effective structure against all livestock uses: -
    - 4 no 3m x 125 mm full round uprights with 90cm to go into the ground,
    - 12 no 3.60m x 125 mm half round horizontal rails,
    - 1 roll of chicken wire netting to exclude rabbits etc.

Squirrels

From about 7 years old newly planted trees are vulnerable to bark stripping by grey squirrels. This is often severe and can result in all the trees being ruined. Hardwoods and softwoods are vulnerable to attack and the only remedy is to kill squirrels particularly during spring and early summer. Trapping using cage traps and approved spring traps is more effective than shooting but traps have to be inspected every day and squirrels destroyed humanely. It is an offence to release them elsewhere. Further information is available on our website.

Weed control

To encourage unchecked growth, trees need effective weed control to remove competition for moisture and nutrients. Removing weeds up to 1m in diameter around each tree significantly improves survival and growth rates.

Tree Spats / Mulch mats

- Effective against all weeds except bracken, dock and thistle.
- Size from 50 cm to $1m^2$ or in 12m rolls x 2m wide.
- Are synthetic and designed to rot after 3-4 years.

Note:

- The corners of each spat should be turned under the soil for anchorage or weighted with stones.
- Voles can live beneath and strip the tree bark.

Composted Mulch

Bark and wood chip can suppress weed growth if spread 8-10 cm thick. This method is widely used in landscaping, often to disguise black plastic mulches but unsterilized composts or bark chippings can bring disease and should be avoided. Fresh farmyard manure and inorganic fertiliser can scorch roots and bark. Impractical for large scale planting projects.

Strimming or grass cutting is NOT an effective method of weed control as very often it leads to damage to the tree from the machine involved and simply makes the grass more vigorous.

Herbicides

- Can remove weeds for whole season.
- Available in: liquid & granules.
- Applied with: sprayer/weed wipe (liquids) & “pepper pot” shaker (granules).

Timing

- Will depend on the choice of chemical.
- Control should start early as weed growth is greatest from April to June.
- Continue until trees are established.

Application

- Read the label for product suitability, application rates and safety.

- Precautions: seek advice if you are unsure.
- Spot treat around each tree to 1m diameter.
- Unwanted trees and shrubs can be controlled at the correct time of year with a systemic herbicide by:
    - Injecting the stem.
    - Spraying foliage or coppice regrowth.
    - Painting freshly cut stumps immediately.

CAUTION

- Most chemicals kill trees.
- Use a shield to keep spray drift away - do not spray the whole site as this wastes costly chemical and kills valuable wildflowers.
- Wear protective clothing
- Make sure that you are properly trained, certified or use a properly qualified contractor.
- It is an offence to apply a pesticide to a crop or by a means for which it is not approved.
- Use pesticides safely - read the label before you buy

Please contact Coed Cymru for further advice

www.coed.cymru