

Practical Guidance

A Woodland Trust guide to

Tree planting for free range poultry

April 2014



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About this guide

This Woodland Trust guide to tree planting for free range poultry provides advice on tree planting design, woodland establishment and maintenance for all woodland poultry producers, and meets the Woodland Standard for poultry products (See *Meeting the Woodland Standard* box on page 5).

Tree planting for free range poultry

The ancestors of domesticated chickens were forest birds and many of their behavioural traits persist in modern hens. It is therefore not surprising that providing tree cover for free range chickens is beneficial to both the welfare of the birds and their performance.

Encouraging ranging is crucial if the potential welfare benefits of the free-range system are to be realised. In commercial free-range systems it is quite usual for only a small proportion of the hens to use the outdoor range, with those that do remaining close to the house. Poor range use is associated with an increased risk of injurious feather pecking (IFP) which causes pain, leads

to plumage loss and can result in cannibalism and increased mortality in affected flocks. Hens with poor feather cover also have less thermal insulation and therefore need to consume more feed to maintain their body temperature. This can have significant economic consequences for the farmer.

Properly undertaken, tree planting around hen housing can encourage the ranging of hens which promotes natural behaviours that are good for their welfare. Studies have demonstrated that on laying hen ranges with tree cover, a higher proportion of the flock uses the range and roam further than hens kept on ranges without tree cover. Tree cover can also help reduce nutrient load, parasitic contamination and poaching in the area close to the house by drawing the birds away from the building.

Trees close to housing units capture part of the atmospheric emissions of ammonia and reduce the impact on the surrounding environment.



Even just one established tree offers a huge amount of shade and shelter close to the shed



Trees provide an attractive view from the pop-holes and encourage birds outside by providing foraging under natural shelter, away from wind and predation

John Widdowson; Emma Mayo; Jon Walton

Check that the land can be planted

If the land to be planted is ecologically valuable or has archaeological features such as ridge and furrow or earthworks, you will need to check with the relevant authority. As a general rule, trees should only be planted on former arable land or improved grassland. If your land is unimproved then check first to ensure that you will not be damaging any ecological interest. Also, if it is under an existing agri-environment

scheme, check that your planting falls within the conditions of the scheme.

Check if you are eligible for a tree planting grant

There may be incentive schemes to help fund your tree planting. If you are planting over 500 trees, the Woodland Trust may be able to help. Telephone **0845 293 5689** or email **woodlandcreation@woodlandtrust.org.uk**



Mike Townsend (x2); Emma Mayo

Hens will range without cover, but the majority are likely to stay inside



Groups of trees close to the shed offer easily accessible shelter



Trees planted on the perimeter a long distance from the shed provides screening and shelter, but may discourage ranging

Site layout

Often the siting and design of the new wood is constrained by other factors such as the location of sheds, availability of land and field shape. There are still ways of maximising the tree planting in a manner that suits both your site and the hens.

The 'design ideas' section on page 8 provides some suggested site layouts.

Tree spacing

Tree spacing can vary, but a minimum requirement of 20% tree cover is needed to qualify as woodland. If you would like regular, easy to manage lines, then plant at regular 2m, 2.5m or 3m spacing, with ideally 2-3m between rows. Planting at this density will require future thinning when the canopy closes but will become 'woodland' faster and could provide an early source of firewood.

Alternatively, you could plant small groups of trees at irregular spacing of 2-3m leaving larger spaces between the groups for the birds to roam through.

You may want to control the weeds in the tree-planted areas or mow the grass between rows,

so make sure the planting allows you to do this.

Depending on the width of your tractor and topper/mower, allow sufficient space between rows with room at the end of rows for tractor turning.

Planting at wider spacing of say 4-5m will allow for tractor mowing between the rows. Trees can then be spaced 2-3m apart in the rows. Provided trees are well maintained they should still achieve canopy closure within about five years.

If you do want to plant in rows to make management with tractor-mounted machinery possible, try to make those rows a bit wavy and avoid planting in a grid as this looks unnatural.

Graduating species

Planting shrub species on the edges of the planting areas will create a graded woodland edge and encourage the birds to explore. It will also act as a wind break, making the area warmer, and providing better screening of the sheds. However, try to avoid the lower branches of the shrubs being in contact with ground vegetation such as grasses, as this degree of cover can encourage hens to lay outside in the enclosed areas under shrubs.



The trees closest to the sheds will be difficult to establish but they are the most important as they encourage the hens to range, provide screening and soak up ammonia. They will need to be thinned once the canopies have started to close



With no trees or cover nearby, only a few of the bravest hens are venturing out into the range, and all are staying close to the shed



This range contains a mix of planted native species including fast growing willows, and an established tree belt. If there are particularly sensitive areas, such as the bases of ancient hedgerows, it may be worth fencing these out

Milke Townsend (x2); Emma Magjo

Encouraging ranging – planting close to sheds

The trees closest to the sheds will be exposed to the greatest pressure from the birds and may be difficult to establish. However, it is important to persevere as these trees will encourage the chickens out of the sheds. Try planting at a higher initial density to make up for any losses, moving to a lower density of trees behind them so the birds have visibility and are encouraged to roam further. It is important to plant as close to the shed as is practically possible but allowing for machinery access. For example, shrubs and trees at 10m

from the shed will encourage a greater number of birds outside.

Studies show only a small proportion of hens in many large scale units use the range (possibly less than 10%) and of those around 70% will stay within 17m of the house. Well-designed tree planting can encourage use of the range and the hens to range further, which in turn reduces nutrient load from excretion and parasitic contamination close to the house.

The RSPCA Freedom Food guidance provides detailed advice and recommendations on welfare matters relating to the range:

rspca.org.uk/freedomfood

Meeting the Woodland Standard

The aim of the Woodland Standard is to establish new native woodland, so wherever possible only native trees should be planted. The Woodland Trust recommends one hundred percent native tree planting, though the Woodland Standard does allow for a percentage of the planted area to include non-native poplar e.g. white or grey poplar, or hybrid varieties, in order to rapidly establish canopy cover. The fastest growing native species are birch, alder and willow.

Where poplars are planted they must be removed during subsequent thinning as the wood becomes established to allow the slower growing native species to dominate. This is likely to be after at least 15 years but could be sooner depending on growth rate and planting density.



Species choice

The best way to select tree species suitable for your site is to look at what is already growing well in the neighbourhood. This gives a good guide as to which species suit the local climate, character and wildlife of the area, ensuring a better chance of survival.

Top choices for native trees

You can find out more about the top native trees listed here, and other native species, at the Woodland Trust's 'British Trees' website www.woodlandtrust.org.uk/learn/british-trees. These species suit a wide range of soil types and weather conditions, and will also enhance the range for birds and wildlife.

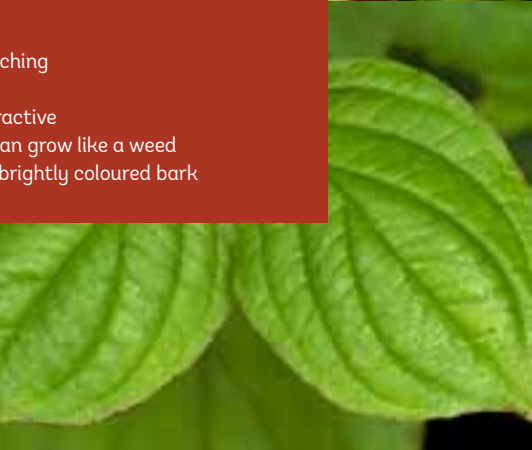
Top native trees

Trees

- Oak** king of the trees, durable
- Wild cherry** good for wildlife, attractive
- Birch** fast growing, good for poor quality ground
- Alder** very fast growing, copes well with wet areas
- Willow** fast growing, also thrives in wet areas, nice and bushy
- Hornbeam** attractive and distinctive, good for firewood
- Aspen** beautiful and delicate tree, prefers clay and wet areas in lowlands
- Rowan** copes with exposed conditions
- Field maple** tolerates most conditions, pretty in the autumn, bushy

Shrubs

- Hazel** good for wildlife and thatching
- Hawthorn** prickly and hardy
- Spindle** prefers richer soils, attractive
- Elder** vigorous growth, bushy, can grow like a weed
- Dogwood** pretty in winter with brightly coloured bark





The young sapling will be protected from the birds with a plastic tube



Space the trees in a way that will suit your future management



Well planted trees will soon start to pop out of the tubes

WTPL/Christine Martin; WTPL; Charles Fry

What to plant

Small bare-rooted or cell-grown (i.e. in peat plug) trees of around 40-60 cm (2ft – 3ft) high are the best option as they are cheap to buy, easy to transport and plant, and will establish quickly. Generally, you don't need to spend money on large standard or pot-grown trees which are expensive, cumbersome and prone to die-back under stress. Invest your resources in good site preparation and good after-care instead.

Buy trees from a specialist tree nursery - there are a number of these around the country - and ask for UK-sourced and grown trees to avoid bringing in tree diseases.

Plant trees as soon after delivery as possible.

Don't store trees outside and do keep them in bags until planted, provided you are going to plant within a week of delivery.

If you can't plant your trees within a week of delivery, they will need to be 'heeled-in'. Dig a trench, laying the roots of the trees into the trench, and then cover the roots with soil. Trees can be stored like this for a few months but will need to be planted before spring or they will start to grow in the trench.

When planting make sure the hole you dig is big enough for the roots of the tree to spread.

Firm in the soil around the roots by pressing hard with your boot.

Make sure all the roots are covered by soil.

When to plant

Aim to plant your trees in the dormant winter period, which for bare-rooted saplings is mid-November to March, and for cell-grown trees can be from as early as October. Don't leave it until the last minute to place your order as nurseries may run out of the planting stock you require, and planting early in the season gives the trees a far

better start in life. If you have clay soils, it's far better to plant in November or December.

How to plant

Dig a hole big enough to encompass all the roots without squashing them. You don't need to put compost or bone meal in the hole as trees will grow well in most soils without any additional nutrients. Place the soil back around the roots and firm in with your boots. Ensure all the roots are covered up and the tree is reasonably upright.

To watch a video on how to plant a tree visit [youtube.com/woodlandtrust](https://www.youtube.com/woodlandtrust) and search for the Plant a Tree guide.

Guards

Trees must be protected with suitable guards. The best type is a solid tubular guard with ratchet ties for securing to a wooden stake. Don't use a cane as these are not strong enough to resist the attention of the birds. The stakes need to be knocked well into the ground - ideally a third of its length - with the top of the stake just below the top of the guard so the tree doesn't rub on the stake as it emerges.

Spiral tree guards are unsuitable as the hens can peck through the gaps in the spiral and kill the tree. Also avoid mesh and combined mesh/plastic type guards as again the hens can peck through these.

The height of the guards is critical as they need to be tall enough so the birds can't jump on to them and peck the tree inside. The best height is a minimum of 75cm, but if you also have deer, use 1.2m tubes.

If the ground allows it, push the guard about a centimetre down into the soil to ensure mice or voles can't get inside and chew the bark.

If livestock are located close to planting areas, they will need to be fenced off from the young trees with post and wire fencing to prevent them from eating the trees.

Design ideas

There are several design options to consider depending on your preferred management practices. All of these designs should encourage the birds to roam as they have trees and shrubs within a close distance of the shed.

Design 1: Plant close around the shed with a clear view of tree cover from pop-holes to encourage birds outside and onto the range



Design 2: Plant lots of groups of 15-30 trees at 2m spacing, with the bulk of trees on the edge at 3m spacing to create shelter



Design 3: Plant large lozenges of trees at 2m spacing and start thinning at 5-10 years



Design 4: Plant in blocks of straight lines at 2m spacing for easier mowing between rows and thin after 5 years



Design 5: Encourage hens outside by leaving corridors between belts of woodland which may take them further out into the range. Plant trees at 2m spacing and start thinning trees at 5-10 years



Introduction to site preparation, marking your site, storage



Start by marking out the planting positions for your trees using stones, spray paint or the stakes when they arrive.



Keep trees in their bags on the planting day so the roots don't dry out in the wind. If they do dry out, soak them in a bucket of water prior to planting.



Some sites may require 'topping' if overgrown with tall weeds. This involves cutting everything down to a certain height to make planting easier.

Pit planting

Pit planting is the most thorough method and is suitable for all ground types, though it can be difficult in areas with stony soils and is quite time-consuming. It is the recommended planting method for areas that are susceptible to drought.



1. Each tree will require a pit to be dug with a spade. These pits need to be several centimetres wider and deeper than the tree's roots.



2. The grass you have dug up can be placed upside down in the bottom of the pit to provide the tree with extra nutrients.



3. Place the tree into the pit and check that all the roots will be below ground level.



4. Now carefully backfill the soil around the tree while holding it upright. Firm the top layer of soil around the tree with your heel.



5 & 6. Now push the stake into the ground next to the tree, making sure it is stable. If using a spiral guard, place this over both the tree and the stake. If using a tube, place it over the tree with the stake on the outside. The tube can then be fixed to the stake using the nylon ties. Press the shelter into the top of the soil. Deer tubes can be tied using nylon ties.
Note: Photo shows a cane, but use a stake for planting for poultry.



Slit planting

Slit planting is a simple method that is suitable for bare soil and grass, and can be an easier method in stony soils than pit planting. We don't advise using this method if you are planting in an area susceptible to drought or with clay soils because in dry conditions the slit can re-open, exposing the tree roots.



1. First, fully insert a spade into the ground and push it forwards to create a slit. Ensure the slit is deep enough for the tree roots.



2. When the slit is open, insert the roots into the slit, keeping the roots straight and ensuring they're all below ground.



3. Then simply remove the spade and push the soil back firmly down around the tree.

T-notch planting

T-notch planting is another quick method suitable for grass covered ground but not bare soil. This method is an alternative to pit planting in areas susceptible to drought but again not recommended for sites with clay soils.



1. Push the spade fully into the ground.



2. At a right angle to the first cut, repeat step 1 to create an inverted T-shape.



3. Take the spade to the original cut and lever it upwards parting the turf.



4. Place the tree carefully in between the sections of turf.



5. Lever the spade back out and the turf will fall into place. Ensure all roots are taken into the hole.



6. Adjust the tree to ensure it is at ground level, and thoroughly firm down soil around the tree.

Maintenance of planted areas

Why weed?

It is essential that the base of all newly planted trees is weed free. This is to ensure that the young tree with its immature root system can access as much water as possible during the growing season.

When to weed and what to use

Weeding should be done as soon as the growing season starts which often is as early as March, but could be April or May. An approved herbicide can be applied with a knapsack sprayer once or twice a year for the first two or three years.

After two or three years the tree roots should be sufficiently well developed to render weeding unnecessary. Mulching is sometimes used but this is not recommended for free range units as the birds will scratch and remove it, and mulch mats are often pecked away by the birds within a year.

For organic farms, the options are screefing (removing grass or other vegetation around the base of a tree prior to planting) or mulch mats (but see above paragraph).

How to weed

A weed-free circle around the base of the tree can lead to scratching by hens right up to the tree stem, damaging surface roots. Creating a weed-free 'polo mint' shape – i.e. leaving a ring of vegetation approximately 10cm wide directly adjacent to the base of the tree - can help protect the roots from scratching by the hens. When using herbicide, this is easily achieved by tilting the lance of the knapsack.

If some trees are still suffering from pecking around the roots, especially trees nearest to the shed, you could try fitting a square of plastic garden mesh around the tree to provide a more peck-resistant surface.

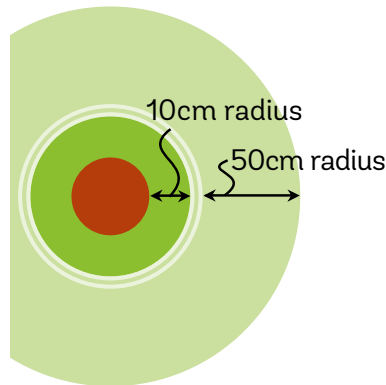
Mowing or topping between rows of trees deters birds from laying outside.

Is watering necessary?

Watering is not normally necessary provided the trees have effective weed control. However if the infrastructure is in place and water can be easily and cheaply applied, then it may be worth considering in periods of severe drought, particularly during the early part of the growing season following planting.



If a tree is not weeded the grass will compete and slow down the growth rate of the tree



Leave a 10cm ring of unsprayed vegetation directly around the tree



A tree weeded in a 'polo mint' shape is less susceptible to pecking around the roots

WTPL/Steven Kind, WTPL

Early maintenance and pruning – up to year 5

Monitor your trees

Keep an eye on your trees by inspecting them about once a month. Look out for trees which don't look healthy and investigate causes. Often it's obvious what it is and can be remedied there and then.

Issues to look out for:

Years 1 – 3

Tree losses

Despite your best efforts, it's likely that some trees will die, possibly 5-10%, and these should be

replaced the next winter. If all the same species are dying then there may be conditions which make this species unsuitable. Consider replacing with a mix of other species. For any trees that have died, remove the guards and store for re-use next winter.

Check your guards

One of the most common issues to address is vegetation growing inside the tube. Don't be tempted to pull this out from the top as this will often pull the tree out as well. Lift the guard and pull out from the bottom. It's fiddly but more effective, and safer. Sometimes guards work loose, particularly on windy sites, and will need firming and straightening up.

If the trees are planted and weeded well there shouldn't be much other early maintenance to do.



Emma Mayo: WTPL

Some tubes here are falling over and need to be firmed up to ensure the trees' survival. There are also gaps where trees have failed and should be replaced



Using a pruning saw to make a clean cut as near as possible to the trunk



Making a clean cut reduces the chance of any disease entering the wound

Years 3 – 4 onwards

Pruning

If you decide to prune, start from the bottom and don't remove more than a quarter of the branches. Pruning can be started once the tree is established - often after 3 or 4 years. Most native trees are best pruned in winter when dormant, except field maple, cherry and walnut which need pruning in summer to reduce risk of disease and sap bleeding. Pruning can reduce damage caused by birds trying to roost on lower branches which aren't strong enough to take their weight; and prevents ground vegetation growing into lower branches which may lead to hens laying outside.

Aim to make a clean cut as close to the main trunk of the tree as possible. Don't cut so close that you damage the bark but don't leave a stump of more than a couple of millimetres sticking out.

Pests and diseases

The majority of native trees are rarely prone to serious pest or disease problems. However, depending on the species planted, your trees may be affected by less serious conditions such as leaf curl, cankers, blights or mildew, but in the majority of cases these are not a cause for concern, as they will rarely kill young trees.

Remove the tree guards

Remove the guards once the stem of the trees are becoming too wide for the tubes and they have started to split, or the trees have grown to over 3m in height. If the tubes are still in good condition they can be recycled and used again. It's best to remove the guards in the spring and summer months as rabbits may eat the tender bark if the removal coincides with a hard frost.

Long term maintenance – year 10 onwards

Thinning

What is thinning and why is it necessary?

Thinning involves the removal of some of the planted trees to reduce the competition for light, water and nutrients. By giving the retained trees more 'room' they develop a better shape and are more wind-firm and less likely to blow over. Thinning also helps to retain some vegetation by allowing light to reach the ground.

When to thin

Timing of thinning depends on a number of factors such as initial planting density and how quickly the trees grow. Typically, the first thinning of a new broadleaved wood takes place between year 15 and year 25. However if you want to maintain the ground vegetation, you should thin as soon as you see the shade of the trees significantly reducing the ground cover which could be as early as year 10. About 50% canopy cover and 50% sunny areas is a good combination.

Thinning little and often is better than heavy and infrequent.

Fell when birds are not around and clear up quickly, leaving some felled material for the birds, but be aware that piles of branches can harbour vermin and hinder your future maintenance.

How to thin

To select the trees to be removed, walk through and familiarise yourself with the range of trees you have. There will be tall, straight, well-formed ones as well as small, spindly, poor quality ones. Vigorous growing species, such as poplar and willow, planted to provide quick early cover, should be thinned out in favour of more long-term but slower growing species such as oak. Shrubs don't usually need thinning. Once you have a feel for what you have, mark the trees which need to come out. Typically this won't be more than one in ten trees and if it's more than one in five you are probably selecting too many.

If your woodland is of any significant size and the tree trunks are thicker than a tin can, check with the Forestry Commission (free) to see if you need a felling licence: forestry.gov.uk

The cut stumps can be treated with a herbicide to prevent re-growth.

Making use of your felled trees

Firewood: Thinned trees can be used for firewood, with the smaller material either chipped or burnt. Poplar is considered a poorer species but will burn quickly when well-seasoned and makes good kindling. Ash, oak, hawthorn, hazel, beech, rowan and hornbeam are all good for firewood as long as they are well seasoned.

If you do make bonfires ensure these are completely extinguished before allowing the birds to roam again.



Dense woodland canopy – without thinning and management your woodland could become too dense and dark



This woodland is due to be thinned as the canopy has closed and it is very dark inside. Creating areas of light will allow the ground flora to return and the hens should roam further into the woodland area



This woodland is ready for thinning as the canopy has closed. The dappled shade and thick undergrowth around the trees has tempted hens to range up to 50m from the shed

WTPL/ Lee Dudley; WTPL/John Tucker (x2)

Long term maintenance – year 10 onwards

Pollarding

What is pollarding?

Pollarding involves felling trees at a certain height, generally above which animals can browse the re-growth. You can then continue to cut the re-growth back to this point. Consider pollarding if you don't want to remove the tree through thinning but want to restrict the extent of the tree, as is often done with street trees.

Why is pollarding a good solution for Woodland farms?

- Keeps trees at a manageable height and scale for long term maintenance, while maintaining some cover
- Avoids complete canopy closure, allowing light to reach the floor to maintain vegetation cover

- Allows trees to re-grow out of reach of birds
- Provides useful raw materials for use on the farm (e.g. firewood).

How to create new pollards

- Think about pollarding once your tree has reached the desired height, which is likely to be after at least 10 years
- This should be when stems are broomstick or wrist thick, although they could be up to 20cm depending on tree species
- Bear in mind that growth will come from below the cut so cut a little higher than you want
- Once the tree has been cut, try to ensure that it is maintained by regular cutting on a 10-20 year cycle (appropriate for most situations)
- Do the cutting in the winter months.

If you are unsure about how to manage your trees once they are larger and need to be thinned, pruned or pollarded, then seek professional advice.

WTPL; Emma Mayo; John Tucker; Exe Valley Eggs



Use an extendable pruning saw to prune high branches on more well established trees



The hens will make good use of the shade cast by more mature trees



Within a few years, the young trees will start to provide shade and shelter

Further advice

Overall, a well-designed tree planting scheme which provides good canopy cover is the most practical and sustainable method to encourage hens outdoors and get them ranging further; and to provide opportunities for species-specific behaviours such as foraging.

For more information and recommendations on how to manage the range to improve hen welfare, download the RSPCA Freedom Food guidance: rspca.org.uk/freedomfood and FeatherWel advice guide on injurious pecking: featherwel.org/

The Woodland Trust woodland creation team is happy to provide advice to all woodland poultry producers on the design, establishment and maintenance of planting schemes, as well as possible funding support.

Call on **0845 293 5689** or email woodlandcreation@woodlandtrust.org.uk





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