Farm Woodlands and Carbon

Practical Guide

Farming for a Better Climate

Woodlands can fill a variety of roles, for example providing timber and fuel, shelter for farm livestock, habitat for wildlife, landscaping, conservation and amenity.

Increasingly, farm woodlands are also being seen as a renewable energy source, producing logs, charcoal, woodchip and pellet. The introduction of the Renewable Heat Incentive (RHI) has focused attention on the potential for farm woodlands to provide a supply of wood fuel, either for sale or home supply.

Management of existing woodlands or new planting could provide opportunities for farms looking to improve business efficiency, reduce costs, reduce the farm carbon footprint.

This Practical Guide looks at opportunities for locking up carbon in farm woodlands and benefits for the farm business.

How can woodlands benefit your farm?

Woodlands can provide a range of on-farm benefits such as shelter for livestock or buildings, a source of fuel or income from timber, an increase in farm biodiversity, add to amenity and sporting interest or simply enhance the landscape. Reasons to consider new planting or actively managing existing farm woodlands include:

- Potential for a renewable energy source. This could be logs, charcoal, wood chip and/or pellet and could be used on farm for heating. Biomass boilers fuelled by wood could attract a payment under the Renewable Heat Incentive (RHI) scheme.
- Small areas of woodland can be planted on land which is less efficiently worked, resulting in fuel savings per hectare.
- Woodland locks carbon into both soil and vegetation; this could form part of a carbon offset scheme, reducing your farm carbon footprint (see the Woodland Carbon Code for more details).
- Ordinarily, woodlands need no or very limited fertiliser applications.
- All parts of the tree have a use; woodlands produce no waste.

Our Practical Guides cover five useful topics:

1. Use energy and fuels efficiently
2. Renewable energy
3. Lock carbon into soils and vegetation
4. Making the best use of nutrients
5. Optimise livestock management

For more Practical Guides, Case Studies, information on our Focus Farms and ideas to benefit your farm, visit www.farmingforabetterclimate.org

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Websites

www.farmingforabetterclimate.org
www.forestry.gov.uk
www.forestry.gov.uk/carboncode
www.scotland.gov.uk
www.decc.gov.uk/RHI
www.carbontrust.co.uk
www.ipcc.ch
www.forestry.gov.uk/forestry/infd-863lbl
www.usewoodfuel.co.uk
www.agrecalc.com

The European Agricultural Fund for Rural Development: Europe investing in rural areas
Scottish Government Riaghaltas na h-Alba gov.scot
SAC CONSULTING
SRDP Farm Advisory Service

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Natural versus managed woodland?

Natural woodland consists of trees native to an area. If of sufficient size, natural woodlands are capable of being self sustaining. However, very little *large scale* natural woodland is left in the UK, most remaining natural wood consists of small blocks, which do require management.

Managed woodland will not accumulate as much carbon as a natural woodland, since trees are harvested before (in carbon capture terms) their maximum potential is reached. However, products from woodlands can remain in service for hundreds of years, far beyond the natural life span of the tree in its natural state. Wood can be used to replace other products which have a high imbedded carbon content such as coal, oil and gas used for heating or construction products such as steel and concrete, making wood a more environmentally friendly option.

Woodland Carbon Code

The Woodland Carbon Code (WCC) is a voluntary code which encourages a consistent approach across all woodland carbon projects.

Woodland planting schemes must adhere to a set of standards before they can be awarded the carbon code accreditation. For those investing in the carbon within the woodland, the code offers clarity about the carbon savings that are realistically achievable

Farm woodlands as a carbon store

Woodlands provide a natural way to store carbon dioxide (CO_2), one of the key greenhouse gases implicated in driving climate change.

Trees use the carbon in CO_2 to make wood. Over time, woodlands accumulate this carbon within the growing trees. If carbon sequestration, ('locking up' carbon) is your main aim, you will need to take into account a number of factors, including rates of growth, potential size of the tree and longevity, which is pre-determined by the type of tree species and planting site.

Management is also a critical factor, since inappropriate management can cause woodland to go into decline, releasing CO_2, back into the atmosphere.

Farm woodlands can provide a valuable source of shelter for livestock, however over-grazing is one of the most common causes of woodland decline. Older, dying trees are not replaced simply because the new growth is eaten by cattle and sheep. Soil poaching can speed up the death of trees by damaging soil structure and drainage. Bark stripping and damage to roots can also cause the early on set of decay and the eventual collapse or death of a tree. Active management of existing woodlands will help to preserve tree growth and regeneration, locking up more carbon from the atmosphere.

Which tree species?

The table below shows that trees lock up carbon at differing rates, depending on tree species.

In Scotland, Redwoods, Firs such as Douglas fir, Spruces and some Poplars will sequestrate carbon at a relatively rapid rate and to greater potential volumes than, for example pines and birches. These species can reach large sizes and with the exception of poplar, are capable of living to great ages. However, all trees may not be suitable for all sites; a modest rate of growth from a more site suitable tree species may well be the only option.

Woodlands are multipurpose so tree species selection will also depend on other objectives, for example fuel, landscape, conservation and sporting interests.

Tree Species	Approximate age	Range of potential carbon storage (tCO_2/ha)
Beech	110 years	242 - 310
Oak	110 years	237 - 273
Sitka spruce	50 years	197 - 346
Scots pine	65 years	151 - 251
Douglas fir	65 years	269 - 456