Farm Woodland **News**



The newsletter for participants in Farm Woodlands Schemes • Issue Number 34 Spring 2020

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Editorial

Since our last issue in autumn 2019, tree planting and its role in mitigating climate change has really come to the fore in the mainstream media. The political commitment to increasing forest cover should give us confidence in the future of forestry.

Where are all these trees going to come from? While the numbers promised can sound quite unfathomable, our forest nurseries already supply around 100 million trees every year. We have the lowdown from Trees Please on how they grow our future forests. Timber-producing woodlands of all sizes have a key role to play in reducing greenhouse gas emissions. The UK uses 56 million cubic metres of timber products every year and it's likely this will increase as this renewable and sustainable material replaces more plastics, and carbon-storing timber replaces carbon-emitting concrete and steel in construction.

To keep growing timber sustainably, we must also consider the effect of climate change on softwood species choices. Parts of Scotland will become less suitable for the species we currently rely on but changes in climate present new opportunities to diversify our woodlands with a wider range of species. In this issue you'll find an introductory guide to alternative timber conifers more diverse woodlands are more resilient woodlands. One of the main problems for establishing the next rotation of a timber crop is the large pine weevil. They're attracted to clearfell sites and can decimate a newly planted crop of saplings. Our feature from Tilhill explains how they're researching and developing new methods to protect saplings from weevils and reduce reliance on insecticides.

For more help and advice on any of the topics covered in Farm Woodland News, contact the Farm Advisory Service on 0300 323 0161 or advice@fas.scot. Visit www.fas.scot for free videos, podcasts and downloads.

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Off-cuts

Trees to help salmon in the Cairngorms

£5.5 million is to be spent on restoring riparian woodland along the River Dee and its tributaries. The project, run by the River Dee Trust and Dee District Salmon Fishery Board, aims to help the declining salmon population by re-establishing riverside trees which provide shade, shelter and nutrition to the freshwater ecosystem. The one million native trees to be planted will recreate parts of the landscape lost to reforestation and grazing over the last 2,000 years.

Climate change threatens to make extreme temperatures a more common occurrence and numbers of Atlantic salmon have been declining to the point of extinction in southern Europe. It's hoped that the trees will help to prevent river temperatures becoming dangerously high, and damaging young salmon stocks, as has happened in recent years.

What 3 words are that tree's address?

If you live or work in a rural area, you've probably, at one time or another, had to give directions to someone following a sat nav quite literally down the wrong track.



While grid references have long been the standard method of pinpointing a specific location, without the right map to hand they aren't always quick and easy to use.

What3words has given a simple address to every 3m-square in the world, identified by three words. Using the free mobile phone app you can pinpoint locations, such as field gates or individual trees. You can share the threeword address with others via text message or email, which they can either open in the what3words app, or view through another mapping tool, such as Google Maps.

You could find the Birnam Oak in Little Dunkeld using its address ///narrates.form.fakes. It's a useful tool to share meeting points, or record hard-to-find locations but what3words can also help. The emergency services can now use the what3words system, meaning you can easily communicate the precise location of an accident on the farm or out in the woods.

Thousands of businesses, including Forestry England, are encouraging their employees to use the app. As a free app, it's worth downloading it and testing it out. You never know when it might come in handy, or even help save a life.



Large Pine Weevil *The small pest causing a big problem for restocking*

Cat Kent

Technical Champion – Weevils and Assistant Forest Manager, Tilhill

Hylobius abietis, commonly referred to as the large pine weevil, is regarded as one of the biggest threats to newly planted trees on restock sites. Conservative estimates suggest that the direct cost of *Hylobius* damage to forest owners in the UK is in the region of £5 million per annum.

Conifer restock sites provide the optimum habitat for *Hylobius*, as they support all stages of the lifecycle. When the trees are cut down they release volatile organic compounds which attract adult *Hylobius*. The conifer stumps provide suitable areas to lay eggs and for the larvae to mature to adulthood. A new generation of adults emerge from the stumps in late summer and feed on newly planted saplings.

Adult *Hylobius* feed on the phloem, cambium and bark of saplings and will kill trees if they strip all the bark around the stem, known as girdling. Although this article concentrates on the impact of *Hylobius* on conifer restocking it is important to acknowledge that *Hylobius* feeding is non-specific, and they will also feed on broadleaves and mature trees if coniferous food sources are not available.

Hylobius will feed at any time of year when the temperature is warm enough but, as a general rule, are active between early March and November. There are two peak times when feeding damage is very high: one in spring before the migrating adults lay eggs, and one in late summer when new adults emerge from stumps.

Because conifer restock sites provide the optimum habitat for *Hylobius* they can support very large populations which, if left



uncontrolled, can result in entire restock crops being wiped out. When feeding damage is moderate and the tree is not killed the damage still has an impact on crop quality, causing poor stem form and reduced growth, which may have an economic impact at harvest. Thus, it is important to effectively control *Hylobius* populations and limit the level of damage they cause.

Alternative silvicultural systems

Before large scale clear-felling and restocking programmes became common place, low numbers of Hylobius existed in woodlands, relying on individual tree deaths for breeding and egg laying sites. This limited availability of suitable sites controlled population size. The rise in the number of commercial clear-fell and restock sites Hylobius has been provided with an abundance of suitable breeding sites and food provision to support large populations with the ability to cause severe damage to restock saplings. Alternative silvicultural systems to clear-fell, such as continuous cover forestry, avoid large areas of trees all being felled at once. This could reduce Hylobius populations by limiting the number of stumps suitable for egg-laying at any given time. However, the move away

from clear-fell to continuous cover systems is not always economically or practically viable and usually can't be considered as a *Hylobius* control method alone.

Fallow period

After clear-felling, sites can remain susceptible to Hylobius damage for a number of years. Waiting 2 to 4 years before replanting can allow the population to decline and adults to disperse, but it is important to note that felling permission usually requires sites to be restocked within 3 years of felling. Leaving sites fallow for a number of years can dramatically reduce the level of damage to saplings but leaving sites fallow can result in substantial weed growth, requiring more herbicides, which has both environmental and economic implications. It also must be acknowledged that leaving a site fallow, lengthens the rotation time and increase the time until the next harvest and timber income.

Integrated pest management

Integrated pest management focuses on using non-chemical control options instead of, or in combination with, chemical controls rather than relying exclusively on chemicals as a first response to pests. This may be simply planting larger, more robust trees that are better able to resist weevil attack and competition from weeds and can include decision support tools such as Forest Research's *Hylobius* Management Support System. Forest managers can monitor the abundance of weevils on site and the software uses this data to predict if damage is likely, and what treatment is recommended.

Biological controls

Parasitic nematodes (Steinernema carpocapsae) can be applied to stumps to kill *Hylobius* larvae. This reduces the number of adults that emerge, and subsequently the level of damage to saplings and the number of adults migrating to new sites. Application requires large volumes of water and specialised equipment to be fixed to forwarders. This can make the use of nematodes impractical and expensive in remote locations or where ground conditions prevent forwarders being used.

Physical protection

Tree shelters can help to protect against *Hylobius* damage but using them exclusively for large-scale weevil protection is expensive. To date, a number of physical protection methods developed specifically for *Hylobius* protection have been tried. These include waxed paper sleeves, plastic sleeves and various polymer and wax coatings sprayed directly onto the trees, see photos overleaf. Some of these methods have been successful in Scandinavia, but trials in the UK, where *Hylobius* populations are significantly higher, have found them to be effective only if onsite populations are low.



Left: Monitoring weevil populations. Right: Weevil damage.



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Three examples of physical protection measures being trialled.

Insecticides

Even when using a combination of nonchemical methods it is often not possible to avoid *Hylobius* damage. When there are no practical alternatives, the only remaining option is to use insecticides. Currently, the main insecticide used is acetamiprid, which can be applied to trees at the nursery so that saplings are protected as soon as they are planted. Trees may need to be re-sprayed post-planting, when weevil populations are high.

It is quite likely that the use of acetamiprid may become more restricted in the future. Without effective alternative weevil control options it may become economically unviable to restock some areas after harvesting, crop quality will be adversely affected and future timber availability will be reduced. It is critical that we develop alternative methods to control weevil damage, ideally not reliant on insecticides. For the past 11 years Tilhill, in partnership with Maelor Forest Nurseries Ltd, Cumbria University, Scottish Woodlands and, historically, the Forestry Commission and Forest Research, has been involved in trials to find such alternatives.

The trials have focussed on chemical, physical and biological control methods, testing 150 combinations of different products including physical and biological controls, different application rates and application methods. To date, acetamiprid (an insecticide) has proved most effective, but recent trials have placed more focus on trialling biological controls, repellents and physical coatings and barriers, including Neem extracts, waxed paper sleeves and various polymer and wax coatings sprayed directly onto the trees. Different types of coatings have been trialled, sometimes with adjuvants included, different coagulants used or with abrasive elements, such as guartz, mixed through.

Tilhill is also a partner of the *Hylobius* Industry Research Programme, along with others from the private and public sectors, including Forest Research, Forestry England, Forest and Land Scotland, Natural Resources Wales, Coillte, Northern Ireland Forest Service, Confor, Scottish Woodlands and the forestry nurseries Maelor Forest Nurseries Ltd, Trees Please and Christie Elite. The partnership has identified five priorities to address the threat of *Hylobius*:

- Develop alternatives to chemicals that work in areas of high *Hylobius* population, including physical barrier products.
- 2. Develop a viable biocontrol option, using insect pathogenic organisms such as fungi and nematodes that prey on and kill *Hylobius*.
- 3. Identify a range of alternative, weather resistant, non-neonicotinoid pesticides that have low environmental impact and that might be used as a last resort if other methods of non-chemical protection fail.
- 4. Develop an improved predictive *Hylobius* population model, appropriate for use in all situations.
- 5. Create a regularly updated guide on *Hylobius* integrated pest management for use by all stakeholders across the sector.

The estimated cost of achieving these priorities is approximately £2 million. The Scottish Government has already made available £550,000 from the 'Can Do' Innovation Fund, but support is still needed. The partnership is appealing to corporate supporters across the forestry sector, concerned individuals, private charitable trusts and various research bodies for grants for additional funding.

For advice on *Hylobius* management on restock sites, call the FAS helpline on 0300 323 0161 or email advice@fas.scot.



DID YOU KNOW?

Biochar is a form of charcoal produced by burning biomass – it's the residue left after the biomass, such as woodchips or brash and harvesting residues, has burned at high temperatures without enough oxygen to completely combust. Biochar can be made from all sorts of feedstock and waste products, including straw and rice husks, and even sewage sludge.

When made under the right conditions, it's rich in phosphorus and can be used as a soil improver. It has a porous structure, acting like a sponge soaking up and then gradually releasing water and nutrients. Using char as a soil improver is not a new idea – it's been used for thousands of years but today there is increasing research and interest in its potential at a commercial scale. The carbon in biochar stays locked up for hundreds of years, meaning it could play a role in enhancing soil carbon. Current research includes a study using biochar on a forestry restock site.

The phosphorus-rich brash and waste material from timber processing mostly ends up as low-value garden mulch. By turning it into biochar it could be returned to forest soils to enhance their nutrient and carbon content. This could be particularly valuable on nutrient-poor upland sites where trees can be slow to establish. If it's found to improve the growth of restock trees, biochar could be a valuable addition to the timber cycle, getting more out of waste products and helping to create more 'closed loop' systems.



Diversifying your Woodlands Growing alternative conifers for timber

Leona Baillie

Forestry Consultant SAC Consulting

More than half of conifer woodland in Great Britain is made up of one species – Sitka spruce. It was not without good reason that we planted so many of these trees in the past – they grow fast, and they will grow (almost) anywhere. When post-war Britain started to reforest on a national scale in the 1950s and 1960s Sitka was hailed as a 'wonder tree'. Promising fast returns for investment forestry, large monocultures were a simple and efficient way to increase timber supply, fast.

Sitka's rapid growth and dense canopy also made it a popular choice for establishing new shelterbelts and small farm woodlands quickly. Reforesting much of Scotland with one versatile tree species may have seemed like a good idea at a time when the benefits and impacts of woodland, beyond timber production alone, were not the priority. The legacy of the Sitka boom is that we have comparably less experience of growing other timber conifers in the UK, and still rely heavily on this one species. It is something of a circular problem – the industry is set up to favour Sitka, because it has always favoured Sitka.

The UK's only native conifer suitable for timber production, the Scots pine, is the second most abundant species in Scotland, followed by lodgepole pine, larches and Norway spruce. Other species account for less than 3% of all conifers in Scotland. The UK Forestry Standard now ensures than new woodlands include more than one species, and the interest and research into alternatives to Sitka is growing.

It's understandable that if you're investing in growing trees on your land, it might feel like a 'safe bet' to choose Sitka as the main species. However, putting all your eggs in one familiar basket is arguably more risky than growing lesser-seen trees.

Changing threats and changing climate

So far, Sitka spruce has proved itself relatively resistant to major pests and diseases but new threats entering Britain are always a possibility. We only have to look at the impact of Phytophthora ramorum on the larch species to imagine how something similar could devastate spruce forests.

We should expect drier conditions in some places and more frequent summer droughts as a result of climate change – bad news for rain-loving Sitka spruce which can suffer stem cracking in drought conditions. While this may restrict the range of Sitka, it will make previously unsuitable species, which favour milder climates or are frost intolerant, better able to grow here.

What else can you plant?

We've summarised here ten of the most promising alternative timber conifers to grow in Scotland. This introductory guide describes the suitable site conditions for each species, their characteristics and timber properties. Some, like Norway spruce and Douglas fir, have been planted more widely than others so there is good experience of growing them in Scotland. Others will be less familiar but show good potential where they have been planted. Note that the order of the list doesn't indicate any kind of suitability ranking, they are all suited to different kinds of site conditions.



Coast redwood.



Several of the species listed are shade tolerant, meaning they specialise in spending their early years growing below the canopy of taller trees. These are ideal candidates for converting even-aged stands to continuous cover forestry (CCF) systems, for example by underplanting within a thinned wood. The most shade-tolerant species are less suited to open planting, and the clearfell-replant systems currently most commonly used in UK forestry.

General yield class is a measure of productivity. It is the average annual gain in timber volume per hectare per year over the rotation. For example, a yield class of 16 indicates an average annual timber volume gain of 16m³/ha/yr. Yield class varies between species (some grow faster than others) and site conditions. A tree species planted on an unsuitable site will have a lower yield class than the same species planted on a suitable site.

Species	Climate	Soils	Exposure tolerance	Shade tolerance	General yield class	Typical rotation length	Timber properties & uses
Norway spruce Picea abies	Moist climates ideal but tolerates drier conditions than Sitka.	Slightly dry to wet, medium to high fertility. Avoid shallow soils and heather.	Low	Moderate	6-22	55-60 years	Sawmills accept timber as equivalent to Sitka spruce. Some construction grade, particle board and chipwood.
Already relatively More frost toleran	widespread and well under t than Sitka but requires i	erstood. Has the potential more sheltered sites. Ecolo	to replace Sit	ka spruce in e food source	eastern are for red squ	as as the cli iirrels.	mate becomes drier.
Douglas fir Pseudotsuga menziesii	Fastest growing in wetter western areas but tolerates drier conditions than Sitka.	Well-aerated, moderately dry to moist, moderate fertility. Avoid heather.	Very Iow	Moderate	8-24	50-65 years	Heartwood naturally durable. Knot-free beams and clear wood for carpentry and veneers highly valued.
Has the potential t and late frosts. Pro Ecological value as	Has the potential to replace Sitka spruce in eastern areas as the climate becomes drier. Less affected by drought but vulnerable to exposure and late frosts. Produces strong timber favoured for construction and there is a premium market for transmission poles and large beams. Ecological value as food source for red squirrels.						
Macedonian pine Pinus peuce	Wider range of suitable site conditions than many other conifers. Frost hardy, cold tolerant.	Flushed peats (<50cm deep), podzols, sandy soils. Wet to moderately dry, very poor to rich fertility, although poorer stem form likely on moist, rich soils.	Hardy	Low	~10	~70 years	High timber volume compared to other pines. Not particularly strong but very stable, suitable for indoor joinery and carpentry, chipwood and pulp.
High girth-to-heigl affecting Scots pine and can take sever	ht ratio makes it stable wh e and other pine species. S al years longer to reach p	here windthrow risk is higl See Species Focus in FWN I lanting size in the nursery.	n. Good resista ssue 31. Comp Slow to estab	ance to red-ba bared to othe blish but then	and needle conifers it grows moi	blight and is more dif re rapidly af	other diseases seriously ficult to grow from seed ter five or six years.

Species	Climate	Soils	Exposure tolerance	Shade tolerance	General yield class	Typical rotation length	Timber properties & uses
Western red cedar Thuja plicata Suitable geogr continuous co durability of h	Wide climatic range. Ideally suited to warm, moist climate of the west coast, but can also grow well in drier eastern areas.	Can grow in a relatively wide range of soil conditions, from free-draining to poorly-drained gleys. Optimum is very moist to fresh, medium to very rich fertility.	Low urally regener of natural re- ner outdoor u	Very high rates well, off generation is ses.	12-26 fering pote important	70-90 years ntial for mi: to avoid 'be	High yielding. Naturally durable heartwood suitable for outdoor uses. Better suited to processing by small-scale millers as the stringy bark can cause problems for peeling machinery at sawmills. xed-species woodlands, eanpole' trees. Natural
Coast redwood Sequoia sempervirens	Ideally suited to mild, moist areas with summer fogs. Frost and cold intolerant.	Freeling draining, moist to fresh soils, with medium to very rich fertility. Intolerant of drought or waterlogging.	Low	Moderate	12-26	60-90 years (for premium logs)	High volume, strong very stable wood. Naturally durable heartwood. More fire-resistant than most conifers. Highly valued for house-building, decorative uses.
Currently its la than Sitka spru knots have a t	Currently its lack of cold-hardiness limits this species to south-western Scotland but range likely to increase as climate warms. Can grow faster than Sitka spruce on the best sites. Saplings require good weed control until established. Pruning beneficial to produce clearwood as dead knots have a tendency to fall out after sawing. Can be coppiced.						

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Species	Climate	Soils	Exposure tolerance	Shade tolerance	General yield class	Typical rotation length	Timber properties & uses
Western hemlock Tsuga heterophylla	Mild, damp. Thrives with regular fog and rain during the growing season but also productive in drier conditions.	Deep, well-aerated acid brown earths. Slightly dry to moist; poor to medium fertility.	Low	Very high	12-24	70-90 years	Strong and workable, suitable for indoor and outdoor construction and joinery, as well as pulp.
Can grow in a regeneration so red cedar, with	Can grow in a fairly wide range of conditions but produces the best timber on sheltered sites. Highly shade tolerant and very good natural regeneration so underplanting/replanting not required once established. Ideal for continuous cover systems, especially with Douglas fir and western red cedar, with which it grows in its native range. Avoid planting adjacent to native woodlands where it will invade by profuse self-seeding.						
Japanese red cedar Cryptomeria japonica	Warm, wet oceanic west coast climates ideal but will grow in drier locations. Intolerant of frost or wet snow.	Can grow on a wide range of soils. avoid peaty or very dry sites and heather. Very moist to slightly dry, poor to very rich fertility.	Moderate	Very high	14-26	50-70 years (in native range)	High volume. Very strong and construction material from native range has very high value. Naturally durable.
Likely to become more suited to Scotland as climate warms. Although experience of this species in Britain is limited it has potential to produce valuable timber. Rapid growth means good thinning is essential to avoid 'beanpole' trees. Pruning may be necessary to produce high-value clearwood. Can be coppiced.							
Lawson cypress Chamaecyparis lawsoniana	Thrives in wetter western areas but also grows well in drier locations. Frost hardy but can be damaged by snow.	Best suited to brown earths. Fresh to moist, poor to rich fertility. Avoid peaty soils and heather.	Low	High	8-20	50-70 years	Very stable and durable timber. Suitable for outdoor uses and sought-after for log cabins.
Plant only tree Both are suited	Plant only trees bred for forestry – seed from hedge or garden plants will not produce viable timber trees. Will naturally regenerate well.						

Species	Climate	Soils	Exposure tolerance	Shade tolerance	General yield class	Typical rotation length	Timber properties & uses
Grand fir Abies grandis	Grows best in cool and moist conditions but tolerates lower rainfall than Sitka spruce. Broad temperature range but intolerant of frost and snow.	Well-drained soils but prone to drought-crack. Fresh to very moist; poor to rich fertility. Avoid peats and heather.	Low	Very high	8-34	40-60 years	Very high yielding. Suitable for treated fencing as it soaks up preservatives better than Sitka spruce. Pallets, particle board, woodfuel and pulp.

Best suited to lower slopes and valley bottom. Strong disease resistance. Quick to establish so competes well in species mixtures (with western hemlock and western red cedar in native range). Growth can be rapid in even-aged stands so careful thinning is needed to produce good quality timber, or grow more slowly in continuous cover systems. Naturally regenerates well so may not need to be under-planted/replanted once established.

Noble fir Abies procera	Tolerates heavy snowfall and hard frosts but vulnerable to drought. Grows best in north and west where precipitation is high.	Fresh to very moist, poor to rich fertility. Can tolerate well- drained soils better than Sitka spruce. Avoid heather.	High	Low	8-34	40-60 years	High yielding with good stem form. Self-processing larger diameter logs may be more lucrative than selling to sawmills. Pallets, particleboard,
							pulp.

Well suited to higher elevations than most conifers but avoid south and south-east facing aspects. Suitable alternative where disease risk is high for lodgepole pine and Japanese larch. Good alternative to Sitka spruce at high elevation and exposure. Establishes well on new planting sites. Moderate thinning is important. Pruning to maximise knot-free timber can provide income as the foliage is in high demand for floristry and wreath-making.

tolerate compared to other conifers.

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The modern foresters' mantra is: the right tree, in the right place, for the right reason. No tree will grow well in unsuitable soils, or the wrong climate, and it's crucial to be clear about your objectives and *why* you want to plant trees. Growing a wider range of species will help make our forests more resilient in the face of climate change and future challenges. If you'd like to find out more about growing alternative conifer species, contact the Farm Advisory Service on 0300 323 0161 or advice@fas.scot. **References and further information** Mason W.L., MacDonald F., Parratt M. and McLean J.P. (2018) What alternative tree species can we grow in western Britain? 85 years of evidence from the Kilmun Forest Garden. Scottish Forestry Volume 72 No. 1.

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Providing Welfare Facilities for Forestry Operations

Gillian Clark

CEO, Forest Industry Safety Accord (FISA)

Forestry workers often work in isolated and challenging locations and are expected to undertake difficult tasks to a professional standard. The provision of facilities for their general welfare has been required by law for over 20 years.

FISA 806 Welfare Safety Guide

The newly released FISA 806 Welfare Safety Guide clearly outlines what the existing Workplace (Health, Safety and Welfare) Regulations 1992 require. This FISA guide also gives examples of types of welfare provision that are considered reasonably practicable on forestry sites. These examples demonstrate how on larger, more complex sites, welfare facilities can be multifunctional. They can provide seating for site meetings, toolbox talks, and for rest and shelter from the weather, as well as space to store site paperwork, and provision of drying facilities. The FISA guide on welfare is new to the forestry industry and has been released to give the forest industry guidance on how to



meet the existing legislation. Regs 4 (1) and (2) of the Workplace (Health, Safety and Welfare) Regulations 1992 require that both employers and those who, to any extent, have control of a workplace must provide welfare facilities. In a forestry setting, this is the employer and the Forest Works Manager (FWM). The FWM must ensure that adequate welfare facilities have been provided for those working on site by agreeing who is responsible for providing them (either the FWM and/or the principal Contractor). Paras 203 and 204 of the Approved Codes of Practice (ACOP) for

remote workplaces and temporary worksites suggest that, as far as possible, chemical toilets which have to be emptied manually should be avoided, and that toilets should be of flushing type. The ACOP reiterates the requirement for running water for washing. The FISA Guide contains a table which shows a range of examples that may be suitable for a range of forestry site situations. Drinking water must be provided whichever option is chosen. Each site should be considered on a case-by-case basis. Facilities need to be fit for purpose, well maintained, and safe for people and the environment.

When planting and spraying work is being undertaken on site, other legal requirements must be considered. For example, washing facilities for dealing with chemical products, required under COSHH for planting and spraying activities over large areas of land. A purpose-built welfare unit should be positioned at a suitable location e.g. where vehicles are to be parked. Additional or movement of welfare provision should be considered as the work moves across large sites.

COSHH Regulations 2002 (as amended) is the law that requires employers to control substances that are hazardous to health. An employer is responsible for taking effective measures to control exposure and protect health. If engaging 'self-employed' labour on a planting site, the main contractor 'controls the work' and they are then responsible for the protection of those persons under the COSHH Regulations.

What are my responsibilities as a landowner?

As a Landowner, your core health and safety guidance for forestry is the (refreshed 2019) FISA Guidance on Managing Health & Safety in Forestry (GMHSF). The 2019 GMHSF is not new, having been first launched in 1999 with earlier updates in 2003 and 2014, but it now clearly explains the roles and responsibilities of those planning and delivering forestry work. Crucially, as a Landowner you have the following key responsibilities:

- Co-ordination of activities on the overall landholding for health and safety purposes
- Gathering information about hazards on and around forestry worksites (and any environmental sensitivities) and communicate them to the FWM
- Ensuring the work on a site does not affect the health and safety of other people. This includes making sure the person or organisation with overall control of the forestry operation, the FWM, is competent in terms of health and safety
- You and the FWM must co-operate to ensure the forestry work and access arrangements are coordinated with any other activities taking place on or around the land.

If you are in doubt about your own knowledge or ability to do this, it is in your interests to appoint a competent agent to act for you, or to secure other expert assistance. Get a competent FWM! If you engage a contractor directly, you are taking on the role of FWM. If you are not competent or resourced to do all that this entails, you should engage a competent person to do it for you.

If your contractor offers to act as FWM, you must check they are competent to do so. If you engage an agent to act on your behalf, you need to check they are competent to manage forestry works to fulfil your legal duties and responsibilities to the standards and requirements outline in the FISA GMHSF. To check competence, you will need to make enquiries - does the FWM/Agent have the right combination of skills, experience and knowledge? The degree of competence required will depend on the work. The level of enquiries you make should be determined by the level of risks and the complexity of the job. Remember, forestry work is highly skilled, complex and can be high risk, so the level of competence will need to match this. Planning and carrying out commercial forestry operations involves several tasks and processes that have to be managed to ensure health and safety is built into every activity, for example:

- Selecting suitable equipment
- Completing risk assessments
- Communicating effectively
- Protecting the health and safety of the public
- Establishing safe working practices
 Ensuring appropriate training and competence for all involved
- Selecting skilled and experienced contractors who are competent
- Supervising the work effectively

It is important that the FWM and everyone else involved understands which role(s) they have to fulfil in each situation. Any role may be performed by an organisation (such as a forestry business) even though it will generally assign an employee or another person to perform the functions of the role on its behalf.

It is clearly possible to delegate the functions of a particular role to an individual; it is not possible to delegate the legal responsibilities that go with that role.

Some roles, for example, the FWM role or the contractor role, have significantly more responsibilities than others. However, all roles are interdependent and require discussion and co-operation.

The guide has an 18-month feedback period with request for comments to be feedback to FISA (info@ukfisa.com). Having this review period will assist in getting the guide right for the industry; this is important as we want to encourage the industry to step forward and improve the approach to welfare provision on forestry sites.

FISA guidance on all aspects of safety in forestry can be found on the FISA website: www.ukfisa.com

Scotland planted 22 million new trees in 2018-2019 and the Scottish Government intends to keep increasing planting targets over the coming years. Add to this a further 37.5 million or so needed to replant the 15,000 hectares per year felled across the UK to supply a buoyant UK timber market and the numbers can seem astronomical. So where are all these trees going to come from? Andy Howard explains how forest nurseries are already supplying millions of trees and arguably make up the backbone of UK forestry.

Trees Please Ltd is a family owned and operated tree nursery in the Tyne Valley, covering 300 acres and supplying 14 million trees every year. We grow trees from seed and supply them as bare root plants, both conifers and broadleaves for the forestry sector, plus the stakes, tubes and tree guards needed to help the trees establish.

The operation relies on a flexible workforce, prepared to work through whatever the best of the British weather can throw at them. There are normally around 25 staff throughout the summer, which rises to around 50 people in the winter, when plant lifting, grading and dispatch takes place.

Crop rotation is vital for a successful tree plant nursery, so the fields are used in cyclical rotation with trees and cover or arable crops. Maintaining high quality nursery soil is crucial to being able to grow a tree sapling from seed, in a viable timeframe, that has the best chance of establishing once planted in its final destination.

Tree seed collection is a very labour-intensive, and costly, activity, and is generally lead by a company specialising in this work. These collectors have come to know where in the country the best seed-providing trees are, and when the time is right, for each species and location. Each autumn they'll be out gathering the best possible seed for the nursery. Being able to use quality seed is vital to ensure high rates of germination success and the vitality of the trees being grown.

The industry does also have a number of seed orchards around the country for the tree species in highest demand, for example Sitka spruce. These orchards are stocked with trees grown from selected seed and managed to produce the maximised amount of seed per year. Whether the seed comes from an orchard or out in the 'real world', the nursery will only use seed that has a traceable provenance. Supplying only UK grown trees avoids the biosecurity risk of introducing new pests and diseases with imported plant material. Under the Forest Reproductive Material (Great Britain) Regulations 2002 the Forestry Commission is responsible for identifying and tracking the seed and planting stock during production and marketing.

Great Britain is split into 23 native seed zones – regions of provenance which have similar ecological and climatic characteristics. This system allows our customers to request native species grown from a seed source that most closely matches the environment where they will plant and grow the trees.

From when seeds are sown, through to the plants being bagged up and delivered to the planting site, every tree is traceable to the seed source it came from. They are delivered with a seed certificate, and now plant passport, which verifies and provides a record of their provenance.

To prepare a field for trees the soil is first 'sterilised' over winter. In early spring the tree seed is then, dependent on species, sown into or broadcast onto prepared raised beds.

Once the seed has been sown into the beds the weather largely takes over the work of growing the trees, so long as the nursery can keep the vermin and weeds under control. Weeding is largely a manual process on hands and knees still, and is one of the spring and early summer tasks that enables the nursery to maintain year-round employment for a significant proportion of the field staff. CONTINUED OVER





An irrigation system operates throughout the nursery, proving vital in the summer of 2018 and being somewhat redundant in the summer of 2019.

Keeping the seedlings and young plants sufficiently watered is vital to successful germination and early growth. A lot of the broadleaves are sown as seed in the spring, and sold as plants of 20cm to 60cm size the following winter. Conifers on the other hand are much slower to germinate, establish and grow to being saleable plants. It generally takes two to three summers from sowing to lifting conifers for sale. Failed germination can severely impact the availability of saleable planting stock each season.

When the plants have reached a suitable size for planting out, they can be lifted and prepared for sale but this can only be done once they're dormant. Trees stop growing when temperatures cool in the autumn and lifting them before they enter dormancy damages their root systems. A few early and hard frosts are always welcome on the nursery.

The process of lifting involves taking the plants from the ground using tractor-lead

machines, automatically shaking the soil from the roots as much as possible, and then manually packing them into crates. Wet conditions make this very difficult though, both in terms of speed that the lifting machine can operate at and also the success of shaking the clingy mud from the tree roots.

The crates loaded with saplings are then transferred to the grading shed, part of the large warehouse and cold storage units. Every single tree is individually inspected by hand, all 14 million a year. The inspection is firstly for form and structure, and then plants are graded according to their height. A saleable plant needs to have a good dominant leader, and whilst small plants may be able to go back into the fields to grow them on for the following season, plants that are too big can often prove hard to sell. Not many tree planters like to lug large heavy plants up and down hillsides.

The inspected and graded plants are then bundled, usually into 25s, and packed into black-lined bags that will help to protect the plants from sunlight. This is important to avoid the plants starting to grow if they are out on a planting site waiting to be planted for a little while after delivery. Once bagged the young saplings are ready for delivery but most will go into cold store first. Our cold stores hold up to 7 million plants, keeping them in dormancy until they are needed by our clients. The cold stores enable the business to operate more efficiently in lifting and grading large numbers of plants, and then having the right trees available for dispatch at the right time.

For restocking operations we can provide a pre-treatment service for weevil (*Hylobius*) control. Plants are sprayed with a coating of Gazelle insecticide (acetamiprid) prior to despatch so they are protected as soon as they are planted on site. We are keeping well abreast of alternative methods of weevil control currently being investigated and assessed across the industry.

It is fair to say the last decade has been a transformative one for forest nurseries, with significant growth in demand for conifers being the main driver. This has seen the nursery expand both in land usage and the size and types of buildings needed to meet the increasing demand.

The next decade is shaping up to be an experience the nursery industry has perhaps not gone through before, with governments making huge tree planting commitments. We foresee broadleaf planting potentially fulfilling a bigger share of this planting than has been the focus in the last couple of seasons. We're also looking at innovative new products such as the biodegradable tree guards. All this looks like an exciting future for tree nurseries and forestry as a whole.



DID YOU KNOW?



Some tree trunks grow in a spiral. This can add strength and flexibility, allowing trees to flex in the wind or under heavy loads of snow. It can also help the internal movement of sap and nutrients. The spiral allows transport around the tree trunk, not just straight up and down as would be in a straight-grained tree.

This spiral form is usually only visible on a tree that has lost its bark, like this Scots pine pictured on the Mar Lodge Estate.

While spiral grain may be a beneficial adaptation for the tree, it is bad news for wood quality, reducing strength and causing warping in sawn timber.

Although environmental factors, primarily exposure, play a role, it's thought that genetics is the major driver of this phenomenon. Avoiding spiral growth forms is a focus of timber quality research and tree breeding.

What's new from FAS?

The latest Farm Woodlands updates on the FAS website:

Podcast: Woodland Creation & Management - Frequently Asked Questions

To help you make the most of the 30 minutes of free advice offered by FAS, we've recorded the answers to ten of the most frequently asked questions that are put to forestry consultants and Scottish Forestry.

Video: Access for harvesting

The easier it is to access a woodland, the easier it will be to look after it. This video will help you start thinking about planning access for harvesting, or for planting new woodlands.

Video: Cultivation for tree planting

Choosing the right method of ground preparation for a site is critical to give trees the best possible start. See the various cultivation methods and machines in action to understand which options best suit different locations.

Video: Right tree in the right place

What species of trees should you plant? This all depends on why you want to grow trees and what your ground is like. Learn about where and why you might plant the main woodland types supported by the Forestry Grant Scheme.

Events

At the time of going to print all FAS events have been cancelled or postponed until further notice, due to the COVID-19 pandemic. Many events will still go ahead as online webinars that you can call into from home. On-farm events, such as the planned woodlands events above, may be rescheduled in future.





National Advice Hub T: 0300 323 0161 E: advice@fas.scot W: www.fas.scot

Woodlands Events

to best effect.

Agroforestry, Shelter and	Postponed
Woodland plots – Rural	Thursday 7
Innovation and Support	May, 10.30am –
Service (RISS) Event	3.00pm Glensaugh,
Visit Glensaugh agroforestry	Laurencekirk,
trial to hear about their 32	AB30 1HB.
years' experience integrating	To register your
trees and grazing. Discussions	interest, contact
will include practical	Val Angus 01835
considerations and grant	823322 or val.
funding.	angus@sac.co.uk.
Integrating woodland on	Postponed
an upland livestock farm	Wednesday 10
Find out about the Sheep	June, 10am,
and Trees grant package	meeting at Stobo
that funds access roads now	Village Hall, near
for future timber harvesting.	Peebles, EH45
See the benefits of new	8NU. Register your
woodlands for livestock, water	interest on the
quality and timber income.	FAS website.
Managing small woodlands	Postponed
Learn about managing and	Wednesday 24

June, Rossie Priory harvesting small woodlands profitably, and see how small-Estate. Register scale machinery can be used your interest on the FAS website.

Please register for any events you're interested in so we can let you know if or when revised dates are confirmed. Please check the FAS website and social media channels for the most up-to-date information. Remember that there's still lots of helpful information on the FAS website and that the FAS helpline and email service are still running.

Forestry Grant Scheme Update

Strong interest in Woodland **Creation funding**

The 2019/2020 planting season has been another bumper one for woodland creation. At the time of writing, enough projects had been approved to exceed the Scottish Government's original planting target of 10,000ha for 2019/20, and Scotland is well on the way to achieving the increased target of 12,000ha for the year. The planting target for 2020/2021 is also 12,000ha, with projects for more than half of this area already approved. There are enough projects currently going through the application process to exceed the planting target. If you are thinking about applying for a Woodland Creation grant for this year, submit your application as soon as possible. The Woodland Improvement Grants for Woodland In and Around Towns (WIG-WIAT) option for 2020/2021 has been closed as the budget has been fully allocated. If you've missed out on this year's funding don't worry, applications are now open for 2021/2022 WIG-WIAT grants.

Did you plant a new woodland in 2015 or 2016?

Scottish Forestry will be contacting those who received Forestry Grant Scheme (FGS) funding for Woodland Creation in these years to find out how these woodlands have established. You will be required to provide information from density assessments to show that the trees have established and meet the minimum stocking density agreed in your contract. If you have had an agent looking after the woodland maintenance and replacing losses, they should be able to provide this information. Please contact your local Scottish Forestry office if you have any questions or concerns about this.

Claiming maintenance payments

If you claiming annual maintenance payments following Woodland Creation or Sustainable Management of Forests (SMF) work, make sure you include these on your Single Application Form (SAF), which needs to be submitted between the 15th of March and 15th of May.

Scottish Forestry Corporate Plan coming soon

In April 2020, Scottish Forestry will publish their first corporate plan, which will set out the organisation's aims for the next three years and longer-term priorities for policymaking, financial support and regulation of forestry. A draft of the plan was published, followed by a four-week public consultation period at the start of this year. Feedback received from the forestry industry and the public will be taken into consideration before the final plan is published.

More funding for forestry: Scottish Government Budget 2020-2021

The Scottish Government's support for forestry and woodlands was reinforced in the latest budget, announced in February. It pledged £53.8 million for woodland grants, an increase of £2.8 million on Scottish Forestry's funding from the previous year. Wide-ranging plans to support forestry were also included in the budget:

- Development of a new national carbon investment programme to attract external investment in natural carbon capture
- Support for sustainable management of woodlands to improve the ultilisation of Scottish-grown timber
- Work with industry and local authority • partners to invest in timber transport infrastructure, and minimise its impact on communities and the environment
- Promote timber transport by rail and sea as alternatives to the public road network
- Mitigate threats to Scotland's trees from pests, diseases and climate change by supporting research, monitoring and intervention.

Timber Market Report March 2020

Graeme Ralph Operations Director, North Scotland, Euroforest Ltd

Timber is an important sector of the Scottish economy adding value to the tune of some £2billion per year. In 2019 we saw Glennon Brothers invest massively in extra capacity, vard space and modernisation of their fencing mill at Windymains on the outskirts of Edinburgh. Further north James Jones have similarly upgraded their primarily carcassing mill at Aboyne to increase capacity, and to replace ageing parts of the mill. Cally sawmill at Dunkeld is about to switch on a new log mill to complement the pallet mill they have operated for many years, and in the board sector Norbord continue with the planned investment in their oriented strand board (OSB) mill at Inverness. Already planned is the start of a period of investment by James Jones at their extremely flexible sawmill at Mosstodloch which produces everything from fence posts to construction timber. All of the above is a vote of confidence for the forest owners in terms of having access to world class timber processing technology in Scotland, and good returns on their investment once ready for harvesting.

66 *"For younger or mediocre*

crops... it is potentially the optimum time to be marketing your timber."

One year ago I was reporting record prices for standing timber in Scotland supported primarily by high sawlog prices caused by exchange rates which favoured domestic production. Today sawlog prices have fallen from the record levels which although welcome for landowners, were really not



sustainable in the long term, and were driven by uncontrolled demand rather than what sawmillers could actually afford. Today standing prices for sawlogs are back by around 20% where this timber is to enter the housebuilding market, but conversely there is still good demand for fencing products, so mills cutting this specification are tending to lead the way on price. Even with the current easing of price what is on offer are still favourable prices when viewed against the background of long term sawlog prices, so should not necessarily be a deterrent to harvesting. Indeed, the pallet and small roundwood markets have not been affected by the same downward price movements. Consequently, particularly for younger or mediocre crops where the sawlog percentage is lower, it is potentially the optimum time to be marketing your timber with all the signs that this situation will remain the case for the foreseeable future. Biomass continues to be a more and more important market as new customers come online, often in remote locations close to forests, so it is worthwhile monitoring such new opportunities in your locality which may make a significant difference to the value of your woodlands.

Overall, a good year behind us if you felled, and going forward an ideal time to harvest your average timber crops whilst waiting for the better areas to mature a little longer.



Modern Apprenticeships Branch out into Trees and Timber

Martyn Davies Head of Forestry SRUC: Scotland's Rural College

It's an exciting time for the world of trees and timber, with increasing interest in the role that trees can play in mitigating climate change and environmental issues. More than ever, the forestry and arboriculture industry needs skilled workers to care for, maintain and manage trees, woodlands and forests, as well as to produce wood and timber products.

It is a dynamic industry that provides a wide range of benefits from the economic and social to the environmental. It is also very specialised and can involve working with a vast array of machines, materials and equipment – from planting stock and applying chemicals, through to the use of chainsaws, harvesters and timber-processing machines.

A Modern Apprenticeship (MA) in trees and timber equips students with the skills and knowledge required to meet the needs of a variety of jobs in today's land-based industries. These include many different types of businesses such as arboriculture, forestry, harvesting, social forestry and greenwood trades. The MA is a work-based qualification with two different work streams: arboriculture and forestry. The forestry work stream focuses on the management of forests and woodland (including planting and harvesting). Arboriculture covers the cultivation, management and care for individual trees, or groups of trees, for amenity purposes. At SRUC courses are delivered from the Barony campus and lead to Scottish Vocational Qualifications (SVQs) level 5 and 6. The qualifications are made up of a variety of units that allow employers to create a customised course for their business needs, working alongside lecturers. This includes mandatory units such as tree identification, health and safety, and establishing and maintaining working relationships, and optional units from the planting of trees and control of unwanted vegetation, to maintaining and repairing paths and surfaces, and felling trees using a chainsaw.

An MA offers a combination of specialist 'on the job' training with high-quality collegebased learning, to ensure apprentices gain the skills and knowledge they need to succeed as a craftsperson forestry worker. Taking place through block release over 12-18 months, the learner's competence is assessed by gathering evidence of their work in a portfolio, with assessment taking place either at the campus or in their work placement.

Skills Development Scotland can provide funding towards an MA if students are over 16, aren't receiving funding from other sources, have a contract of employment and are working in Scotland. Visit apprenticeships.scot for more information about MAs in trees and timber.

Quick Guide to Woodland Creation Grants

The Forestry Grant Scheme (FGS) supports the creation of new woodland that will provide economic, environmental and social benefits. Payment rates for five of the nine grant support options for woodland creation are shown in the table below. Higher rates of payment are available for eligible schemes within the following locations: Central Scotland Green Network (CSGN); Cairngorms National Park Woodland Expansion Target Area; Highland Native Woodland Target Area; Woodlands for Water Target Areas; and preferred and potential areas of local authority Forest and Woodland Strategies.

Woodland Creation option	Total payment rate per hectare for initial planting and annua maintenance for 5 years		
	Standard areas	Target areas	
Conifer*	£2960	£3330	
Diverse Conifer*	£3840	£4320	
Native Scots Pine	£3200	£3600	
Native Broadleaves	£3200	£3600	
Native Broadleaves in Northern and Western Isles	£6720	N/A	

Central Scotland Green Network additional capital payment contribution

Within the CSGN Contribution Area additional funding is available to Woodland Creation schemes.

Core Area	£2500/ha			
Outer Core Area	£1500/ha			
Fringe Area £750/ha				
CSGN contribution capped at 40ha in Core Area				

and Fringe Area, and at 65ha in Outer Core Area.



National Advice Hub T: 0300 323 0161 E: advice@fas.scot W: www.fas.scot

If you need more advice on farm woodlands or any other topic, the Farm Advisory Service has a range of support and help available:

Advice line

For free telephone advice on a wide variety of topics including cross compliance, water framework directive requirements, climate change and other technical issues call us on **0300 323 0161** or email **advice@fas.scot**. The advice line operates between 9am and 5pm Monday to Friday.

Online

Our website contains articles, videos and much more at **www.fas.scot**

Capital Items Payment Rates

In addition to the initial planting grant there is support for capital items that may be required to successfully establish new woodland.

Deer fencing	£7.60/m
Stock fencing	£4.40/m
Rabbit-proofing of fence	£1.60/m
Tree shelters (1.2 to 1.8m)	£2.00 each
Gorse removal	£720/net ha
Bracken control	£225/ha

*If ploughing is used, reduced payment rates for initial planting apply to reflect the cost saving from this cultivation method.