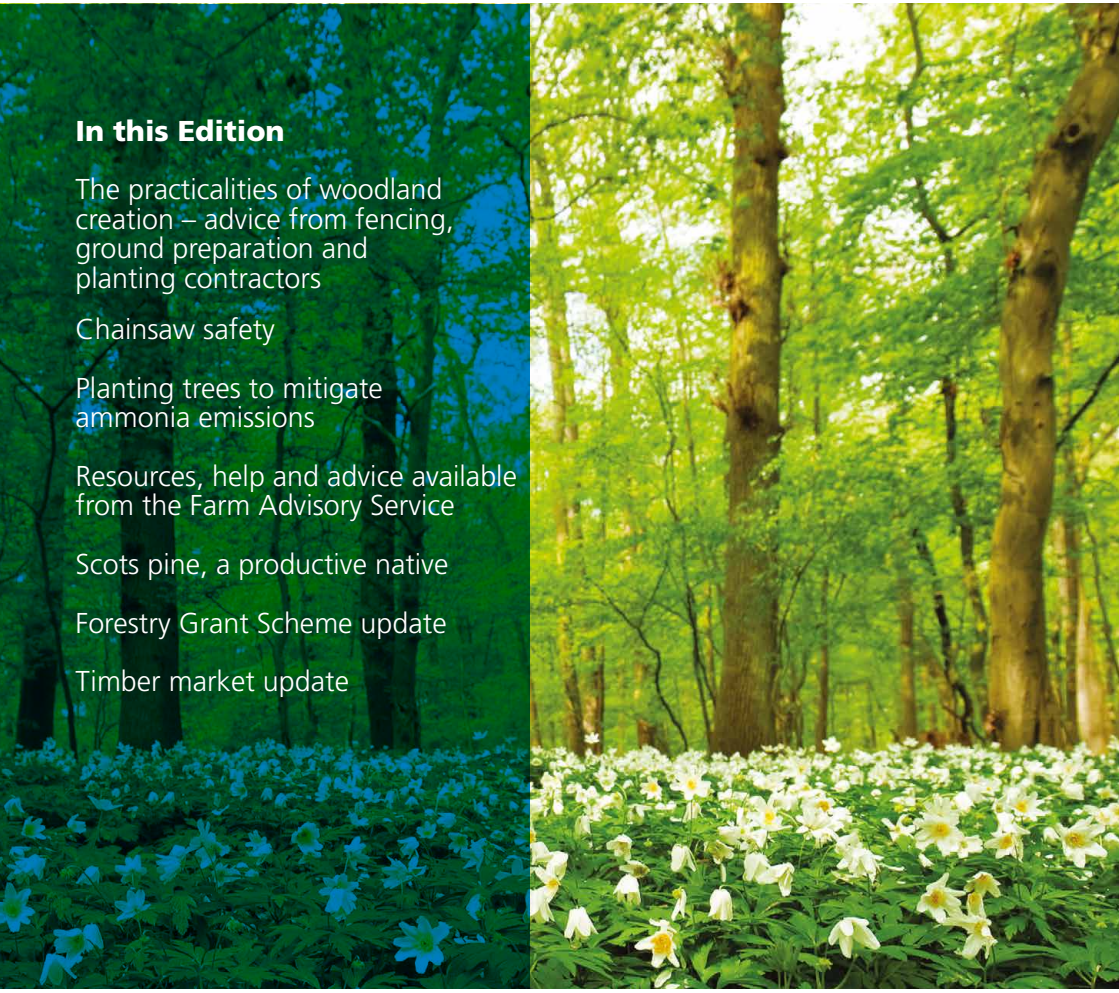
Farm Woodland News

Farm Advisory Service

The newsletter for participants in Farm Woodlands Schemes • *Issue Number 32* **Spring 2019**



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Editorial

Welcome to the Spring 2019 edition of Farm Woodland News – looking at the practical side of woodland creation.

Over the last few months you may have noticed new deer fences popping up, and mounds or ploughing appearing in the landscape, gradually being populated with small trees. Perhaps you have been creating one of these new woodlands yourself. For the first time Scotland has recently met our annual target of 10,000ha of new planting, and with ambitious plans to increase planting to 15,000ha per year by 2025 there is clear ongoing support for woodland creation. If you've not planted a new woodland before, this issue provides a guide to the practicalities of getting thousands of trees in the ground. We spoke to three contractors who specialise in fencing, ground preparation and planting for woodland creation and share their advice on making operations run as smoothly as possible.

Funding support for woodland creation is available as part of the Forestry Grant Scheme (FGS) and you'll find a quick guide to some of the options and payment rates on the back cover of this issue. For more information on FGS funding, or any other woodlands or farming topic, you can call the Farm Advisory Service (FAS) National Advice Hub on 0300 323 0161, or email advice@fas.scot to speak to an advisor. This issue also features a guide to the information and advice available on the FAS website. There you'll find videos, podcasts, and publications on a wide range of topics relating to rural business, as well as details of upcoming events that are free to attend.

Lastly, we would like to hear what you think of Farm Woodland News. What features have you found helpful or interesting? What topics would you like to see in future issues? Do you like to receive a paper copy in the post, or would you prefer to read it online? Email your feedback to tracey.mcintosh@sac.co.uk to be entered in to the prize draw for 12 native broadleaf trees and help us make Farm Woodland News even better.

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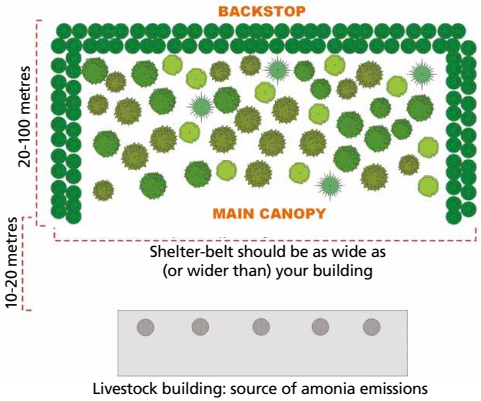
Off-cuts

A new tool has been launched to help farmers **plant trees to reduce ammonia emissions** from animal housing. Trees can capture ammonia in the canopy and help disperse plumes of air pollution but it's crucial to plant the right species in the right layout for this to be effective.

The guidance advises planting evergreen trees in a dense barrier around the edge of the belt, with more openly spaced ammonia-capturing species between the barrier trees and the building (see diagram). When positioned down-wind of the building, this design effectively traps the emissions plume in the woodland, allowing the trees in the centre to soak up the ammonia.

The Scottish Government's Cleaner Air for Scotland strategy is currently under review and there is likely to be increasing focus on cutting agricultural ammonia emissions. Ammonia from livestock can cause nitrogen to deposit into plants and soils. This can damage sensitive habitats, and cause soil acidification, leading to pollution of freshwater. Atmospheric ammonia pollution not only creates an unpleasant smell but its effect on air quality is harmful to human health. Using this form of ammonia emissions mitigation also provides the additional benefits of planting trees. Creating shelter for livestock improves welfare and productivity, and introduces the potential to produce higher priced products such as woodland eggs. Trees around housing units also provide visual screening and landscape benefits, as well as carbon capture and biodiversity value. The tool will help foresters, land managers and farmers choose the best ammonia-capturing trees for the site. It was developed by Forest Research and the Centre for Ecology and Hydrology (CEH), and funded by SEPA.



A woodland design to capture and disperse ammonia.

Non-profit organisation Grown in Britain has reported that **prices for hardwood timber products have increased by 5 to 30%** since 2017. The size of the increases varies between tree species and types of products, ie firewood, biomass, logs, sawn planks but overall demand is currently very strong. The organisation believes that the UK's undermanaged woodlands are a vast and valuable resource, calling on land owners to consider what might be ready to thin or fell. Active management not only provides a sustainable resource and income but improves the health of the wood, benefitting biodiversity and the wider environment.

Global demand for timber is increasing and the UK is currently the second biggest importer of wood products after China.

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Grown in Britain aims to increase the volume of UK timber meeting domestic and export demand by encouraging more and better management of woodlands. Firewood prices are being pushed up by increasing demand for biomass material, meaning that thinning or clear-felling even trees of small diameter or poor stem form can be profitable. For help with woodland management and getting the most out of your trees contact the Farm Advisory Service for free advice either by phone on 0300 323 0161 or advice@fas.scot, open 9am to 5pm Monday to Friday. ■

The Fencing Contractor

Harry McColl *Harry McColl Fencing Ltd*
Leona Baillie *SAC Consulting*

Fencing can be the one of the most costly parts of creating a new woodland but getting it right is worth the investment to ensure the young trees get the best possible start. Installing deer fencing on lowland agricultural land is usually straightforward but protecting trees on more remote ground and difficult terrain can be more complicated.

Contractor Harry McColl specialises in deer fencing, as well as agricultural and garden work. He and his team have experienced the many challenges of forestry fencing and he explained to us how to deal with them and construct a fence that will stand the test of time.

Planning

Access to and across the site is an important consideration for the contractor that will influence their cost to install the fence. The closer they can get vehicles to where they're working the less time they will spend transporting materials. Usually small all-terrain vehicles, such as quads, argocats or tracked machines carrying a post driver are used to move around the site and lay out materials. On really difficult ground that vehicles can't reach, materials and equipment will need to be transported by hand, or in extreme cases by helicopter, increasing the time and cost of the job. Consider if there might be alternative access routes, particularly for reaching the most distant boundaries. Knowing of any particular obstacles, such as boggy areas or difficult water crossings, will help the fencers to plan how they will do the job and travel across the site – getting a machine stuck can lose a lot of time. Usually, contractors will prefer not to store large volumes of materials on site, transporting only what they need for that day. However, if you can offer any secure storage relatively close to the site, this may be helpful.

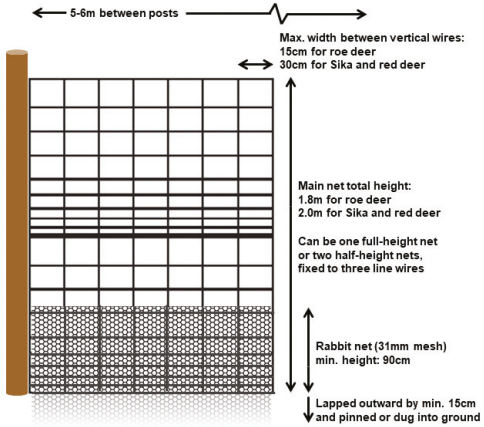
Where to put the Fenceline

The practicality of where to put the fence should be considered from the start of the woodland design process. While some fencelines may be determined by existing boundaries, the path of new fence can influence how practical it is to install and how long it will last. Fencing over rough terrain or obstacles will increase the time and cost of the work, so it's worth considering an easier route. Dips in the ground, watercourses and shallow soil over rock should be avoided where possible, and wet or peaty areas and steep slopes will make things more difficult. Try to minimise changes in direction and gradient. If there's no feasible alternative route there is usually a way to get the fence in, it just might require more time and money. The general line of the fence may be identifiable on maps and satellite photography but it's advisable to then walk the proposed route with your forestry agent and fencing contractor to decide what's practical on the ground, and record the route using a GPS.

Where deer are present it's important to keep the fenceline away from banks and vantage points that would allow a deer to jump over the fence. Water gates can be made reasonably secure but they will always be weak points so avoid the fenceline crossing burns unnecessarily. In areas that are liable to flood debris in flood water can build up and damage fences. Avoiding rough terrain where possible will result in a stronger fence and can be the difference between the fence lasting 15 years and 20 years. The visual impact of fencelines should be considered, particularly if there is high recreational use nearby. Where the planting area runs alongside a public right of way it's best to keep the fence pulled back from the path to avoid it imposing. If a right of way runs through the planting area you will need to provide self-closing pedestrian gates to allow walkers to still access the route and reduce the risk of gates being left open. Members of the public have been known to cut fences open when they have taken exception to being fenced out of a well-used walking route.

Once the woodland design has been finalised, the forestry agent will mark out the decided fenceline on the ground using GPS for accuracy. If the fencing contractor discovers problems as they are putting in the fence, such as unexpected rock that makes post driving difficult, making minor changes to the route to avoid it may be more cost-effective than bringing in expensive breaking equipment. These kinds of changes should be expected but should be discussed with the forestry agent to check how a change of fenceline will alter the planting area, or how the additional costs affect the budget.

Fence Specification



The Forestry Commission provides guidance on fencing specification and they will usually inspect grant funded fences before payment claims are approved.

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Specification varies depending on what you are trying to fence out. The effective minimum height to exclude roe deer is 1.8m, while fences need to be at least 2m high where sika or red deer are present. If there will be livestock in a neighbouring field, the lower half of the fence needs to be strengthened, with heavier gauge netting and additional stock posts in between the full height posts – essentially a hybrid stock and deer fence.

Where rabbits or hares are likely to be a problem, rabbit netting needs to be fitted to the outside of the lower section of the fence. To prevent wildlife digging underneath, the net should be lapped outward, 150mm beyond the bottom of the main fence net. This apron can either be buried by digging and back-filling a trench, or by bending the net outwards and securing it with pins, see photo. As the vegetation grows up through, this effectively buries the net, often making pinning a more cost-effective approach.

If there are black grouse or capercaillie nearby, the upper part of the fence must be marked to make it more visible and reduce the risk of bird collision. The most appropriate method of marking will depend on the distance from lek sites and the exposure of the location.

If there is already stock fencing along the proposed fenceline, provided it is in good condition (usually up to 5 years old) it can be upgraded to deer fence by adding full-height posts and a top net. This is quicker than replacing with a new fence and unforeseen problems with the ground will be avoided because the hard work of driving in posts has already been done.

When deciding where to put gates, consider regular access required during the first few years to plant and establish the woodland, as well as access for harvesting machinery to enter for thinnings and clearfell in the future. It's worth investing in good quality galvanised steel gates where they will be used frequently. For gates that will rarely be used cheaper options may be sufficient. If there is evidence of badger movement across the proposed fence line it may be worth installing badger gates, which are too heavy to be opened by rabbits or hares.

Potential Challenges

If the fencing team come across an unexpected obstacle they can either move the fenceline to avoid it or do what's needed to fence through it. If this means a minor deviation from the planned route it's usually not a problem but they should discuss with the forestry agent and landowner if the change would add or remove a significant area of land. You can then weigh up the effect of altering the route with the costs of sticking to it, for example extra materials or the hire of rock breaking equipment. Soft ground is less problematic but it does present challenges. Additional posts, strainers and tie-downs may be needed to secure the fence adding time and cost to the job.

Fencing work can carry on in most weather conditions, only limited by how the ground conditions are affected. Only prolonged wet weather or heavy snow will stop work if the access or running surface for machinery and the squad become dangerous. If there are a lot of deer on site they may need to be removed when the fence is nearly complete. It's helpful to have a team ready to come in and drive the deer out when the fence is one day away from be closed up. The fencer can leave a gap and create a funnel to help direct the deer out.

Costs

Fencing is generally priced by the metre, plus the cost of specific items such as gates and water gates. The per-metre price will depend on the specification of the fence, and the difficulty of the terrain. A contractor might average 300m of fence per day but work rate could vary from 400m one day on easy ground with good access, to 150m per day on more challenging areas. Where access is difficult the time required to transporting materials around the site will in reflected in the cost.

1.8m deer fence fitted with rabbit netting.

Small water gate.

Maintenance

Good quality fencing materials, installed by a competent contractor should last 20 years. Materials that come with a 15-year guarantee are usually worth the initial investment to minimise the risk of failure and future costs of maintenance. However, a fence is only as strong as its weakest point so it's important to check the whole fenceline at least every few months. More vulnerable points, such as water crossings or stretches next to mature trees, should be checked more often, and particularly after bad weather that could cause damage from flooding or fallen branches. Where there is heavy pedestrian or vehicle traffic through gates these should be kept in good working order as you can't rely on everyone passing through to wrestle with a difficult latch.

What should you look out for when checking the condition of a fence? Loss of tension in the line wires indicates that something has failed further down the fenceline, such as broken or fallen strainer, or snapped/cut wire. Modern netting is made from spring steel which maintains tension and doesn't deform, so can withstand deer or livestock pressure. Deer can squeeze through surprisingly small gaps, often getting under the bottom net or between the top and bottom nets, so check the top, middle and bottom. Make sure any rabbit netting is well fastened to the main netting and remains pinned or dug into the ground.

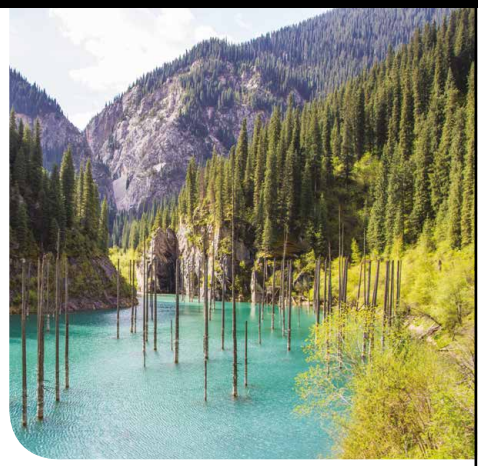
If a fence does become damaged, the contractor who installed it should make it a priority to repair and minimise the time the trees are vulnerable to wildlife. Often repairs will be a relatively quick and easy fix. For example, a fallen tree on the fence may look worse than it is; once the tree is cut and removed the high-tensile wire will spring back and the work may only be to replace any broken posts and re-tighten the wire.

Forestry Grant Scheme Funding

Funding is available for the capital expenditure involved in putting in forestry fences for new Woodland Creation schemes. This is paid per metre of fencing, with different rates appropriate to the specification required. There are also payments for vehicle and pedestrian gates. The Forestry Grant Scheme recognises the additional cost of deer fencing in more remote location and offers a higher rate of funding in these areas. A well-designed fence, installed by a competent contractor using good quality materials should protect your trees until they're established enough to withstand deer pressure. Getting it right from the beginning is a sound investment to ensure you grow a valuable timber crop, or create a healthy native woodland. ■

DID YOU KNOW?

There is an underwater forest of "upside down" trees in the Tian Shan mountains of Kazakhstan. Lake Kaindy formed after an earthquake in 1911 caused falling rubble to dam the area. The limestone valley filled with rainwater, gradually submerging the Schrenk's spruce growing there. While only the stems remain above the surface, the cold water has preserved the submerged branches, and the aquatic plants and algae growing on them give the appearance of an inverted canopy. There are other "sunken forests" in the world, including at Lake Bezid in Transylvania, Lake Periyar in India and Lake Caddo in Texas.



The Ground Preparation Contractor

Craig Cochrane, Scott Cochrane
Cochrane Forestry and Groundworks
Leona Baillie *SAC Consulting*

Fail to prepare, prepare to fail. This old advice could be applied to any project but it's particularly true for woodland planting. Creating a favourable growing environment for young trees is essential to get the crop off to a good start and the best way to do this will depend on the soil type and topography of the site.

A forestry agent will be able to advise on the most appropriate form of cultivation but there's more to consider in actually getting the job done.

Craig Cochrane started his forestry groundwork business 20 years ago, with his son Scott on board for the last four years. Together they employ a team of eight people, doing ploughing, mounding and drainage for woodland creation and restock sites. Craig and Scott shared some of their experience and advice on getting ground preparation right.

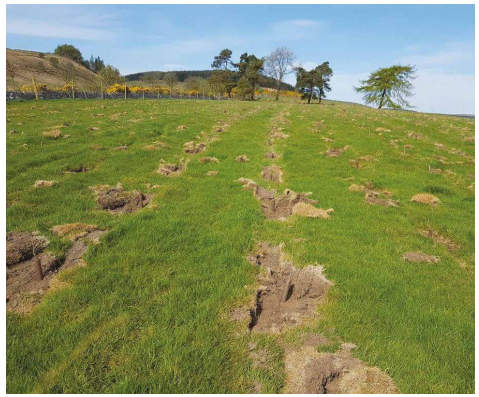
The Right Method and the Right Machine

Most woodland creation sites are prepared either by ploughing, mounding or scarifying. Different types and sizes of plough will achieve different levels of cultivation and continuous mounders are an efficient way to turn over consistent raised planting positions at a specified density. Excavators can cover the less accessible areas by turning over mounds with the bucket on each spot, or dolloping mounds with spoil from drainage ditches. Scarifiers can be used on drier sites to clear vegetation and do more shallow cultivation than ploughing. Ground preparation contractors will sometimes see a need for a new type of machine and build it themselves. For example, Cochrane Forestry Ltd have designed a mechanical screefer which provides minimal cultivation that would otherwise have to be done by hand.

The choice of vehicle used to run the cultivation machinery will depend on the nature of the ground and ease of access around the site. Tractors will be suitable for much agricultural land and can be fitted with double wheels if necessary. Tracked or crawler vehicles will manage more difficult terrain, and standard and low ground pressure excavators can work on softer ground.

Walk the site with a forestry agent to decide what cultivation method to use, and share your knowledge of the ground. If they see it on a dry summer's day but you know it's a quagmire in winter, tell them. How wet or dry a site is, is an important consideration in how best to prepare the ground for planting.

Similarly, if the cultivation method is chosen when the ground is heavily grazed then livestock are removed, the ground may be quite different by the time the work is about to start, and the method originally planned may no longer be appropriate. The type of ground preparation to be used must be specified in applications for Forestry Grant Scheme (FGS) funding. If what was originally proposed is no longer the best suited method for the ground the Forestry Commission may need to approve the change and amend the application. It is better to do this than go ahead with a cultivation method that won't provide the best growing conditions for the new woodland.



Mechanical screefing.

Planning

First, seek professional advice on what cultivation method will be most effective on the ground you're going to plant. On larger or variable sites you might need to use different methods of ground preparation, or different machines on different areas. These might be rocky areas where a plough would struggle, or slopes too steep for a tractor.

Very often there will be some areas of a site that can't be covered by the main machine, and an excavator is needed to complete the job, so it's best to factor this into the budget from the start. If the site needs drainage, you will need an excavator on site anyway, so plan for any excavator ground preparation to be done at the same time.

Access to the site is the next consideration. Machines might be brought to site by articulated lorry. If the farm road isn't suitable for lorries a low-loader or tractor and trailer can be used, or machines may have to track in. Any constraints on how the machines move around within the site should also be addressed early on, for example, crossing over watercourses or under powerlines.

Usually ground preparation should start at the furthest point of the site and work back towards the main access point. This avoids running over cultivation that's already been done, and excessive tracking in and out which can damage the ground, particularly in wet conditions. Tractors will need to return to the gate each night to refuel but excavators can take a bunded fuel bowser with them as they work round the site. This allows machines to be left where they're working, if the drivers can walk or use a quad bike to get in each day.

Where more than one machine is being used, it makes sense for them to work nearby, so that someone is on hand to help if one machine gets stuck. Particularly if an excavator is filling in the areas that the primary machine can't do it's a good idea for them to work together.

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Often, the fencing and ground preparation work can overlap, providing the ground preparation leaves access routes for the fencers, and the fencers leave a gap in the fence for machines to enter and exit the site. If any sections of the fenceline need to have the ground levelled out, it makes sense to use an excavator that needs to be on site anyway. It's best to avoid an overlap with the planting operations, and the cultivation will benefit from having a period to settle, ideally with a few showers of rain, before planting begins.

Contractors will want to have large-scale jobs in the diary well in advance, but may have some flexibility to fit the smaller jobs around them. Unpredictable weather can sometimes mean one over-running job will delay another. It helps if all parties can be flexible but it's still best to agree an approximate start date with the contractor as early as possible.

All vehicles and machinery are vulnerable to breakdown, particularly those working in the demanding environments of woodland creation sites. A little lost time for repairs and maintenance is to be expected but drivers will usually be able to deal with minor problems on site. There are often mechanics amongst the team who can be called out for bigger repairs.

Excavator mounding with a V-shaped bucket.

Weather can delay work if the ground turns soft or slippery, and it may become dangerous to run the machines on slopes. When ground becomes very wet machines may cause deep rutting or get stuck. If a period of dry weather is followed by heavy rain the contractors should monitor the effectiveness of drainage and be prepared to modify the drains and install silt traps to prevent diffuse pollution.

Unfortunately, theft and vandalism are an increasing problem for groundwork contractors. A tank of diesel being stolen will cost the contractor, cause hassle and delay the job. Machines do go missing too, creating a much more serious problem for everyone. Consider letting neighbours know when the work is happening so they can be aware of suspicious activity, for example people at the machines on a weekend or evening when the contractors are only working during the week.

Drainage

If you know the site to be planted needs drainage, this work can be done before the cultivation. However, it's often the case that the places where drainage is needed only become apparent after the ground has been ploughed and water starts to lie at the bottom of furrows. It's always best to allow for some drainage work in the budget. With the advice of the contractor, decide where to route ditches to avoid sending water into other fields. It's crucial to include soakaway areas, sump pits and silt traps to avoid polluting watercourses. Drains should not exceed a gradient of 2°.

Poorly drained sites will produce stunted trees not worth the cost of harvesting and increase the risk of losing the crop to

Continuous mounding using a McClarty mounder.

wind damage in 15 to 20 years. The initial outlay for drainage work will be paid back many times over if it ensures the crop reaches maturity.

Costs

Ground preparation is charged per hectare. More challenging terrain means a slower work rate and therefore a higher cost per hectare. On steep or wet ground, the machines will probably only cover half the area they would in the same time on easier sites. On steeper slopes the machines may only be able to work down the hill, and will have to reverse back up to start the next run. This means the time it takes will be double, or more, than where they can work in both directions.

Double throw mouldboard ploughing.

There will be different rates for using difference machines, for example a tractor and plough can work faster and cover more ground in a day than an excavator turning over individual mounds. For large sites using more than one machine may be necessary to get the work done in a reasonable timescale. As discussed above, there are benefits to having machines working together and only cost in addition to the per hectare rate will be transport for each machine.

Drainage is charged per metre and other digger work, such as levelling areas or access routes will be charged at an hourly or day rate.

In the long run it pays to be realistic about costs. The cheapest way to do something isn't always the best way and it's better to budget for more work, rather than less. Getting the ground preparation right gives the trees the best possible conditions to establish and is a crucial investment for the long-term success of a timber crop.

FGS Funding

The Forestry Grant Scheme can provide funding for the initial planting on a per-hectare basis. This is intended to support the costs of ground preparation, planting labour and the trees themselves. ■

The Planting Contractor

Eric Boyd *Eric Boyd Forestry Ltd*
Leona Baillie *SAC Consulting*

The fence is up and the ground is prepared, it's time to plant the trees. But how do you get thousands of trees in the ground? It's a task that requires good planning and a lot of hard graft by the planting team. Eric Boyd started working in forestry as a teenager and has been running his own business since 2003. Woodland establishment is the main focus, with a team of 20 to 40 people planting up to 5 million trees a year, as well as carrying out maintenance and weeding. We spoke to Eric about what's involved in tree planting, how to make things run smoothly, and get young woodland off to the best possible start.

The Plants

The plants used to establish a new woodland are usually 2-3 years old and 20-60cm tall, although size varies considerably between species and foresters will request a size range such as 40-60cm, appropriate for that particular job. In UK forestry, plants can be supplied either bare root or cell grown. Bare root trees can only be handled and planted during their winter dormancy, generally November to April. To prolong the dormant phase, nurseries keep them in cold storage until they're required on site, sometimes as late as August, and they are transported in light-blocking bags of several hundred plants. Cell grown trees come with their roots in a plug of soil, allowing them to be handled and planted outside the dormancy period. They are transported in crates or pallets and the moisture retained in the soil plug means they can survive longer before planting.

Planning and Logistics

To plant 10ha of a softwood timber crop requires 25,000 trees and these have got to be handled and stored correctly to ensure the health of the plants. During the colder months bags of bare root plants can wait on site for a few weeks without any problems. However, from around April onwards the warmer days mean it's more important to keep the trees in the shade and there's more urgency to get them in the ground before they come out of dormancy or start to suffer from excess moisture inside the bags. On larger sites this may mean planting in stages, calling up batches of trees from the nursery to arrive just as the last batch is being finished. Good co-ordination between the planting team and the arrival of plants is essential to avoid trees sitting around too long. Cell grown trees are less vulnerable to warm weather and the effects of leaving dormancy before they're planted. Storing cell-grown trees requires more space, particularly if they come standing upright in crates. Although they retain moisture within the soil plug, in warm weather or if they are being stored for long period it's a good idea to water them if possible.

Being able to store the plants close to the site can make a big difference to the time spent distributing them. Making sure someone can meet the driver delivering the plants from the nursery to make sure they're dropped at the right location is a simple way to avoid a lot of unnecessary handling of the plants. Usually the planting contractor will want to start at the furthest point of the site and work back towards the main access point. This avoids crossing over planted areas, and the distance to move trees and people decreases each day. If there are difficult areas or pockets of different species mixes, they may do these early on and fill in around them.

Crop/ woodland type	Planting density	Average spacing between trees
Commercial timber conifer crop	2,500/ha	2m
Commercial timber broadleaves crop	3,100/ha (oak and beech) 2,500/ha (sycamore, birch, other species)	1.8m 2m
Native broadleaves areas as part of a productive crop	1,100/ha	3m
Native broadleaves woodland	1,600/ha	2.5m
Native pinewood	1,600/ha	2.5m

Minimum planting densities for grant-aided woodland options.

Planning good access within the woodland design is important for the lifetime of the woodland and can make a huge difference to how efficiently the planting process will be. The planters will work across the site in sections, and caches of plants need to be laid out in strategic locations as a base to work from in each section. Distributing the trees to these points will usually be done with a quad bike and trailer, carrying up to 2000 bare root trees per run. For cell-grown plants this might be more like 1,000 trees per run, because of the additional weight and the fact that they can't be stacked like bags of bare root plants can. If access with larger vehicles is possible, for example using a tractor and trailer to run out a larger load of trees, this could really help speed up the planting by reducing the number of quad bike runs.

Although not always possible, if every part of the site is within 250m of a quad bike track this maximises the efficiency of the planters; they can work down one row and back up the next using one load of trees. Time spent walking back to the plant cache with an empty bag could be better spent planting.

If drainage ditches are being dug as part of the ground preparation work, it may be worth considering if their routes could double as access tracks. Flattening out the spoil alongside the drain can create a running surface for a quad bike. Paying the ground preparation contractor a little more to finish the drains in this way may be a worthwhile investment. Wayleaves for powerlines can also be useful access routes for the small vehicles used in tree planting. Although they may not always be in the most helpful locations for access they can form part of a network around the site. Space between the planting area and the fenceline may not provide enough access by itself but can be useful if connected to tracks that reach the centre of the site. It's important to think about this in the early stages of designing the woodland and be realistic about where access will be practical and safe.

Planting contractors often have a core team who will be kept busy with maintenance and weeding operations for most of the year. During the busy planting months a large number of additional seasonal workers will be needed, many coming from overseas just for the planting season. This means the planting contractor has to plan many months ahead, and know how much work is lined up, so they can hire the right number of seasonal workers.

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Many planters return each year and have experience planting all over the world in all sorts of conditions, so they're not too phased by the Scottish weather and midges.

Planting the Trees

Most tree planting is carried out by hand, using a narrow spade to cut a single notch in the soil. The tree is inserted up to the root collar, making sure the roots are all well buried and not deformed, the tree is upright, and heeled in firmly to close up the soil and stabilise the tree. An experienced planter will usually average 2,500 to 3,000 plants per day, although some can plant 4,000 in a day if conditions are favourable. Planting machines can be a fast way to get trees in the ground but can only work on easy, flat sites with non-clay soils. Hand planting trees is a skill and experienced planters will use their judgement to choose a suitable planting position and ensure each tree is planted well.

Many factors specific to the job will affect how fast the planters can work. The difficulty of the terrain, the density of planting, and the type and size of the plants will all influence work rate. Most planters now use Canadian style planting bags that are worn on a harness. These can carry up to 400 trees at a time, although this will be fewer for heavier and bulkier cell grown trees, or particularly large or bushy plants.

Kevin Cameron demonstrates planting with the Canadian style planting spear and bags.

The type of ground preparation also determines how the planters work. On ploughed sites they will need to pace out the spacing between plants along the furrows to achieve the required density. If the ground has been mounded to planting density the planters' job is straightforward – plant a tree on every mound. Not having to work out spacings means they can work faster, although straight rows produced by a continuous mounder are quicker to plant than less ordered excavator mounds. If mounding isn't at the correct density this can really slow the planters down. It can be difficult to get into a regular rhythm if they have to miss out mounds or find places between the mounds to fit in extra trees. An inconsistent density of trees is not conducive to growing a uniform timber crop, so it's far better to set up the right density during ground preparation. Usually a supervisor within the planting team and the forestry agent will both monitor progress, checking the density of trees in sample plots and the quality of the planting.

Difficult ground that can't be cultivated by machine can be hand screefed by the planting team. This is means steep slopes, wetter, or rocky areas don't need to be excluded from the woodland, provided they are suitable for growing trees, but hand screefing is extremely labour intensive and should be kept to a minimum. It might take five times as long as planting alone on good ground, depending on the type of vegetation to be cleared.

Blocks of single species are the quickest to plant. More complicated designs or mixes of species, such as native woodland areas, can take more time, with each planter needing to load their bags with the right proportion of each species. Where ground is variable, planters should interpret the ground conditions and select the most appropriate species to plant on that spot, rather than just planting whatever they happen to pull out of their bag. Tree planters will work in most weather conditions, although they will be slowed down by heavy rain or strong winds.

Very wet ground conditions mean boots and shovels get clogged up with mud more quickly and each tree may take longer to plant. Only extreme weather, hard frost or snow will stop work altogether. When the ground is hard it's more difficult to close up the soil around the tree and if snow or ice drops into the cut it can desiccate the roots. Trees planted during very dry weather, like that of last spring, will suffer from lack of soil moisture and mortalities may be higher.

Costs

Planting work is usually charged per tree, and rates may be influenced by the specific challenges of the job. Each planter is paid per tree and the contractor also needs to account for time spent organising trees and distributing them around the site. They also need to account time spent on non-planting work, such as the squad moving bags of trees by hand where vehicle access isn't possible. Fitting tree shelters or vole guards will be charged per tree, in addition to the cost of planting. Vole guards are slotted over the tree and pushed into the ground so these can be fitted relatively quickly. Tree shelters require more work to chap a stake in next to each tree, push the plastic tube down into the soil over the tree and fasten it tightly to the stake. Planters need to consider the prevailing wind direction, positioning the tree so that the tube can be placed on the leeward side of the stake. Short tubes take almost as much time to install as large tubes, so costs are not very different.

Maintenance

Planting contractors also provide the maintenance services required to establish a woodland in the first years after planting, such as herbicide spraying, hand weeding and beating up to replace dead trees. Hand weeding is charged per tree and is usually done using a sickle but a strimmer can also be used where conditions allow. Herbicide tends to be applied around each tree using a knapsack sprayer and will be changed per tree; the cost of supplying the chemical may

Bags of bare root trees.

be included in the per-tree rate. Beating up is usually charged differently to planting, depending on the extent of losses. Some beat-up jobs may be charged at a day rate, particularly small jobs or those with an uneven distribution of dead trees, or incrementally based on the proportion of trees to be replaced. The planters need to cover all the ground but won't be planting at every spot, so any rate should reflect the extra walking involved and reduced number of trees planted per hectare.

Planting is a skilled job which influences how successfully a tree will grow, so it's worth paying to get a good job done right first time. Avoid the temptation to skimp on maintenance as this is crucial to how well a tree will establish. Above all, and as is true for most jobs, planning pays dividends in the future, making the whole process smoother for all concerned and successfully establishing your new woodland or timber crop.

FGS Funding

The Woodland Creation grant scheme can provide funding for the initial planting on a per-hectare basis. This is intended to support the costs of ground preparation, planting labour and the trees themselves. ■

Did you know… what's available on the Farm Advisory Service website?

Farm Advisory Service

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

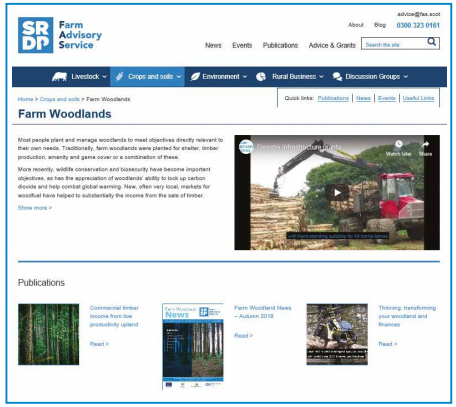
The Farm Advisory Service (FAS) provides information and resources to help farmers and rural businesses become more profitable and sustainable. At www.fas.scot you will find videos, podcasts and publications that are free to view or download, offering practical advice and information on a wide range of topics from farm woodlands to livestock, from renewable energy to accounting.

There are also listings of free events held across the whole of Scotland where you can learn first-hand from other farmers and experts (and lunch is often included too!). You can find farm woodlands information under 'Crops and soils', including the digital edition and past issues of Farm Woodland News.

The latest updates include a video on thinning, a practical guide to woodland maintenance, case studies on planting productive woodlands on both upland and lowland sites, and a podcast discussing woodland creation on crofts. New content is added all the time so check back regularly to see the latest updates.

If you can't find what you're looking for on the website or want one-to-one advice, contact the FAS National Advice Hub.
To be notified of updates and events sign up the FAS newsletter, follow FAS on Facebook and Twitter, and subscribe to the FAS YouTube channel to see the latest videos.

@FASScot



Free access to:

- **Event listings**
- **Latest news and updates**
- **Videos**
- **Podcasts**
- **Practical guides**
- **Technical notes**
- **Case studies**

FAS covers a wide range of topics:

- **Woodlands and forestry**
- **Crops and soils**
- **Livestock**
- **Environment**
- **Rural business**

Chainsaw Work and Safety in Forestry Operations

Gillian Clark
CEO of the Forest Industry Safety Accord (FISA)

As a farmer or landowner you're often expected to be a 'jack of all trades' and undertake a vast array of jobs: engineer, vet, inventor, book keeper and administrator to name just a few. Often forestry work is also thrown into the mix, from topping fence posts, tidying up a dead or blown over tree, maintaining hedgerows around the farm to harvesting large mature trees, if you're lucky enough to have them. Regardless of whether there's a larger forestry operation being undertaken on your land or the work consists of maintaining a small number of trees on the farm, safety should always be a top priority. All work with trees and machines, including chainsaws, is deemed high risk.

Agriculture, forestry and fishing accounts for around just 1% of the workforce in Great Britain, however figures published by the Health and Safety Executive (HSE) show that these sectors have the highest rate of fatal injury of all the main UK industries. Between 2017 and 2018, 33 people were killed as a result of farming and other agriculture-related activities, four more than the previous year.

To put into context how dangerous this sector is, over the last 10 years, almost one person a week has died as a result of agricultural work and related actives. These statistics don't include those who have suffered a serious injury while at work or indeed those who have been made ill by their work.

Two recent deaths reported by the HSE are particularly relevant as both occurred during maintenance of a hedge or a tree, work that most farmers or landowners will undertake at some point. The first incident occurred in the West Midlands on the 28th August 2018, where a self-employed man was killed whilst cutting a hedge with a chainsaw. The second incident involved a man aged over 65 in north Wales on the 8th November 2018. He was killed on a farm when he was trapped by a branch he was removing from a tree. Both of the above tasks seem simple enough to carry out but sadly fatalities can occur all too easily. This why it is key to plan and evaluate this kind of work with risks in mind, and make sure you are adequately trained before undertaking any chainsaw work.

When undertaking any kind of forestry work you must consider: are you 'competent' to use a chainsaw? Have you had sufficient training? Do you know what you're doing? If the answer to any of these questions is no you might want to consider getting a 'competent' and skilled contractor in to carry out the work instead. What does a 'competent' contractor look like? Before hiring someone, ask the following questions:

- Do they have relevant qualifications for the work they will be carrying out?
- Do they have the relevant experience?
- Do they have the correct equipment for the job?
- Do they understand the legal duties both with regards to health and safety, and the environment?

As a landowner it is important to check the above and also try to obtain a reference from a place where they have previously carried out similar work. Lastly, it's always good practice to check that the contractor holds the relevant insurance before work commences.

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For larger sites or operations a landowner may require a Forest Works Manager (FWM). The FWM will need to be appointed by the landowner, otherwise the role falls to the landowner. The role of FWM is vital to managing a safe site, and will also influence other factors such as the quality of wood, volume of harvested timber and value from the site, so be sure to choose a good FWM!

However, even with a competent and experienced FWM it's vital that they receive the correct information which needs to be current, detailed and specific. Usually the best way to do this is through a detailed and up-to-date site map. It's important to know the site and the access to it so that any potential hazards can be identified. Hazards that should be identified to the FWM or contractor include:

- Routes or areas of public access
- Overhead power lines
- Underground utilities
- Areas of steep or particularly hazardous terrain
- Areas of windblown or diseased trees

Once again it's important to check that those you engage hold the relevant insurance. When it comes to public access through or near the site, it is important to take into account the position of roads and footpaths and provide adequate warning signs. In some cases it may be necessary to have barriers or even close roads while operations are taking place.

If you're thinking about undertaking any kind of forestry work and you aren't sure about how to identify the risks or safe systems of work, useful safety information and safety guides are free to download from the Forest Industry Safety Accord (FISA) website: www.ukfisa.com.

A document that is particularly important for landowners to understand their role and the duties and responsibilities that come with it, is Guidance on Managing Health and Safety in Forestry. It contains guidance for everyone involved in forestry, from landowner to contractor, to meet their duties under the Health and Safety at Work Act 1974. This is one of the publications available free to download from the FISA website.

FISA encourages anyone who is often involved in forestry work to join and become a member – you will find more information about membership on the FISA website. ■

Species Focus – Scots Pine

Leona Baillie *SAC Consulting*

A Scots pine timber crop.

The Scots Pine (*Pinus sylvestris*) will be a familiar tree to many, unique in its dual roles in UK forestry as an ecologically important native species and a commercial timber tree. Although it is Scotland's national tree, its native range reaches far beyond our borders, stretching south to Spain, north to Scandinavia, and through Siberia as far as eastern China.

Within Great Britain it is the second most abundant conifer after Sitka spruce, accounting for 17% of woodland area, with most of this in Scotland. Scots pine needles are blue-green or grey-green in colour, about 5-7cm long and grow in pairs. The bark is reddish and forms scales on mature trees.

The Forestry Grant Scheme (FGS) supports planting of Scots pine both as a productive timber crop, and to create or expand native pinewood habitat.

As a Timber Crop

Scots pine as a commercial timber crop can be planted under the Diverse Conifer grant model, or as a secondary species (up to 15%) with Sitka spruce under the Conifer grant model.

As the UK's only native softwood timber tree, planting Scots pine for timber also provides benefits for biodiversity and amenity.

The forestry industry has selectively bred Scots pine to create improved lines, best for growing straight-stemmed timber trees. The species grows best in drier, eastern areas. It doesn't do well on exposed sites so shouldn't be planted at higher elevations, unless the landscape provides local shelter. It requires light non-calcareous soils, growing best on well-drained mineral soils, particularly sands and gravels.

Planting on peats should be avoided but it can grow well on heathland where spruces fail to compete with heather for nitrogen. On very fertile soils it will grow very vigorously, resulting in poor stem form unsuitable for commercial timber.

As a Keystone Species

The Native Scots Pine grant model supports planting of Scots pine woodlands within the Forestry Commission's pinewood zone, see map. It is thought that Caledonian pinewoods once covered nearly 20% of Scotland and the remaining ancient pinewoods are remnants of these large forests, now mostly restricted to pockets in remote glens.

Historically, natural regeneration would have sustained these forests but overgrazing by deer and sheep has meant that most seedlings never become established.

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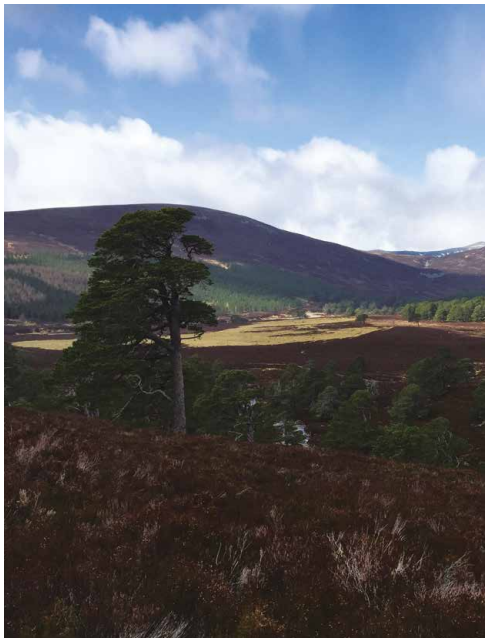
Remnants of the ancient forest, with naturally regenerated saplings in the foreground, and planted Scots pine behind.



Advancing Caledonian pinewood on Mar Lodge Estate National Nature Reserve.

The result is that what's left of the ancient pinewoods is mostly "granny pines", up to 500 years old, and deadwood, with few young trees ready to replace them.

The Native Scots Pine grant funding is part of wider efforts to plant new pinewoods where they once would have been, and help sustain those that remain. Scots pine is the keystone species of these ecosystems and, along with a mixture of native broadleaves such as rowan, birch and oak, supports a network of wildlife.

Pinewoods are habitat for iconic Scottish species including red squirrel, pine marten, wildcat, crossbill and capercaillie, and support ecologically important invertebrate life such as bees and other pollinators.

Planting the trees is the first step to ensuring this important part of Scotland's natural heritage is not lost. If you think your land might be suitable for Scots pine for timber, habitat value, or both, you may be eligible for funding through the Forestry Grant Scheme.

Contact the Farm Advisory Service for free advice either by phone on 0300 323 0161 or advice@fas.scot, open 9am to 5pm Monday to Friday. ■

Forestry Grant Scheme Update

The deadline for guaranteed FGS contract payments has been extended to the end of December 2020, regardless of the outcome of Brexit. Funding for contracts approved by this date will be provided by the UK Treasury to replace EU co-financing needed by the Scottish Government.

There is good availability of funds for all Woodland Creation schemes and the 2020 claim year is now open for applications. In a change since the previous issue's update, more funding has become available for schemes in 2019 within the Central Scotland Green Network (CSGN) target area. Funding for Woodland Improvement Grants (WIG) is becoming limited for 2019, with Woodlands in and Around Towns (WIAT) funding only available for 2020. Sustainable Management of Forests (SMF) grants are limited for 2019 but there is currently good availability for 2020.

The Future of Scotland's Forestry Policy and Support Post-Brexit

Two initiatives to improve the FGS and provide more stability and simplicity for the forestry and farming sectors were announced by Rural Economy Secretary Fergus Ewing in January. The initiatives will focus on streamlining the FGS process and encouraging small-scale landowners to take up forestry grant opportunities.

Recognising forestry as a key contributor to the rural economy and long-term investment, Scottish Government taskforces will work with stakeholder experts to develop improvements to the scheme. The current FGS will remain open until March 2024, with only minor changes to improve the scheme occurring between 2020 and 2024. The longer term future of Scottish grant funding for forestry will be shaped by responses to the Scottish Government June 2018 Consultation on 'Stability and Simplicity – Proposals for a Rural Funding Transition', and working with the forestry sector.

As of 1st April 2019 forestry will be fully devolved, with responsibilities and staff transferring to two new Scottish Government agencies. Scottish Forestry replaces Forestry Commission Scotland (FCS) as the regulatory and support-giving body, while Forestry and Land Scotland replaces Forest Enterprise Scotland (FES) in managing the national forest estate.

Changes to Felling Regulation

The Forestry and Land Management (Scotland) Act 2018 will come into force on 1st April 2019, which will contain some changes to the regulation of felling. The terminology will change, with felling licences becoming felling permissions. The application process will be very similar to the existing process, retaining the look and feel of the forms. Guidance for applicants will be released prior to 1st April and we will highlight the main changes in the Autumn 2019 issue.

Expansion of Highland Native Woodland Target Area

The Highland Native Woodland Target area is being expanded, meaning more locations will be eligible for higher rates of grant payment. All land identified in The Highland Council's new Forest and Woodland strategy as preferred, potential or potential with sensitivities will be included in the updated target area. The changes are expected to come into effect by April 2019. ■

Timber Market Report March 2019

Graeme Ralph *Operations Director, North Scotland, Euroforest Ltd*

Standing timber prices throughout Scotland have never been as good as they are now. Prices for all products took a significant leap in the early part of 2018, fuelled by a combination of factors. Although demand for timber and wood products was nothing astonishing, based on only average demand from new house starts, the relatively weak value of the pound meant imports were expensive, benefitting domestic producers. In addition, the long, cold winter and the Beast from the East meant access to many forests was restricted until well into Q2, leading to upward price pressure on whatever standing timber was placed on the market. This continued to be the case over the rest of last year.

Not wanting a repeat of the supply pressures that most processors experienced last winter, they were all keen to maintain their bought ahead position into this winter. This maintained a healthy level of demand at the end of the year, also fuelled by the usual seasonal reduction in volume coming to the market.

Sawmillers have benefitted from significant increases in sawn wood prices over the last year so should have had a profitable period. As a result, there is significant investment going into sawmills across Scotland that will boost demand once the new capacity comes on stream. Pallet suppliers have seen a very high demand for their finished product due to increased volumes of all commodities moving ahead of the potential end-of-March trading difficulties.

Although there have been some casualties in the biomass sector, it has now become an important part of the market. In many cases, biomass can be the best market for the smaller timber products, with many smaller biomass customers, many on farms, offering shorter haulage routes than the traditional board or paper mills. There has also been significant new investment in the board mill sector, which will help to underpin this market going forward.

At present we are seeing a levelling-off from the steep price rises of last year. Most sawmills have good stocks as a result of a strong buying policy, and the relatively mild winter which has allowed almost unrestricted forest access. The traditional Spring fencing season is about to kick in, which should have a positive effect on both demand and price.

At the time of writing we still have uncertainty around Brexit and its effect on business confidence. Looking at the bigger picture, strong global demand for wood and timber products suggests there is no reason for any major change in demand for the foreseeable future. If you have timber ready for harvesting, 2019 looks like a good year to get it cut. ■

Competition

For this edition's competition there are three questions but no wrong answers – we'd like to know what you think of Farm Woodland News:

- **What features have you found helpful or interesting?**
- **What topics would you like to see in future issues?**
- **Do you like to receive a paper copy in the post, or would you prefer to read it online?**

We want keep providing features that are helpful and informative, and listen to you, the readers.

Everyone who responds will be entered into the prize draw for a copy of the brand new book *Lumberjills: Britain's Forgotten Army* by Joanna Foat, published by The History Press. *Lumberjills* tells the story of the Women's Timber Corps who played a vital role in providing timber security during the Second World War.

The closing date is 31st May 2019. Please email or post your thoughts to: tracey.mcintosh@sac.co.uk

Tracey McIntosh
15 Hay Street
Elgin
IV30 1NQ

Last edition's question was: Solve this anagram: kani grab ale. Hint: If you make wooden flooring, you've this person to thank.

The answer was: Gabriel Janka, an Austrian wood scientist, who invented the Janka Scale in 1906.

Congratulations to James Smart from Turriff who wins a selection of 12 native broadleaf trees.

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 annual 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.

Farm Advisory Service

National Advice Hub
T: 0300 323 0161
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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	£6.80/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