



Trees and woodland in the farmed landscape:

A farmer-led approach towards a diverse, resilient and vibrant agroforestry and farm woodland economy for Scotland



Introduction

The public policy benefits of trees in our farmed landscape are increasingly understood and accepted.

Indeed, the final report of the independent inquiry on farming and climate change in Scotland (Farming for 1.5oC: From here to 2045) proposed an annual target of 6,000 hectares of primarily silvopasture agroforestry systems growing grass for livestock whilst producing timber. That sits alongside the Scottish Government's own target to increase annual tree planting to 18,000 hectares per year by 2024.

Despite the good performance against current tree planting targets in Scotland, this increase is challenging in the context of large-scale afforestation approaches, based on whole farm land use change, becoming increasingly contested.

In this briefing we contend that although these targets are helpful, to achieve a standalone agroforestry target, as well as to make progress on the general woodland planting targets, we need to focus more on the integration opportunities for trees and woodlands within

farming systems, and the barriers to mainstream adoption.

Given the extent of the farmed landscape in Scotland, with some 80% of the total land mass under agricultural production, farmers will be crucial to the achievement of tree planting targets.

There will need to be widespread adoption across a range of farm types to get close to the Scottish Government's level of ambition.

Some farmers will be incentivised to support the public policy benefits, but many others will be motivated by the impacts and opportunities for the economics of their enterprise.

This briefing (1) outlines work undertaken by the Soil Association in collaboration with Cumulus Consultants, to understand the economic case for agroforestry and farm woodland in Scotland. A model has been developed based on the economic impacts of various integrated options on a range of farm types.

We review a potential scenario for Scotland that would deliver 342,000 hectares through a farmer-led approach by 2050. This would deliver more than two thirds of the Scottish Government planting target for that period, based on the 18,000 hectares per year ambition.

The change in net farm income from this scale of delivery is modelled as an annual cost of £100million, which looks realistic when compared to the annual £600million currently spent on farm support and the additional £150million allocated to 'accelerate progress' towards tree planting targets in the 2021-22 Programme for Government.

The briefing concludes by making recommendations for actions by policy makers in to achieve this outcome.

1. This briefing paper is based on the research report and associated economic model: Trees and woodland in the farmed landscape: Towards a diverse, resilient and vibrant farm woodland and agroforestry economy for the UK produced by Cumulus Consultants Ltd. for the Soil Association in April 2022.

The case for agroforestry and farm woodland

The integration of agroforestry and farm woodland into farming systems offers opportunities to enhance the provision of a wide range of ecosystem services, achieving co-benefits for biodiversity, water quality, landscape amenity value and animal welfare, alongside climate mitigation. In addition, increased adoption of agroforestry has the potential to enhance the performance and resilience of food production in Scotland.

Furthermore, the net environmental benefit from a shift to more integrated systems of agroforestry and farm woodland is likely to be greater than converting to woodland at a whole farm scale. Applying these integrated land use changes at a landscape scale is therefore potentially a more viable option for providing a wider range of public goods, in combination with traditional woodland conversion.

If strategically incentivised, this is feasible without distorting the food and rural economies or risking carbon leakage offshore, through the complete conversion of agricultural land.

In addition, strategically increasing agroforestry and farm woodland in Scotland has the potential to enhance the performance and profitability of the agricultural economy by restructuring the landscape to one more supportive of a range of agricultural activities.

Agroforestry and farm woodland can generate new markets for tree-related products and services, with positive environmental impacts. There is growing demand for homegrown and locally produced products across all sectors.

Marketing agroforestry and farm woodland products as sustainable outputs from a regenerative system may help to improve their profitability. Finally, growing interest in private payments for ecosystem services provides a potential avenue for increased support for agroforestry and farm woodland.

In summary, agroforestry and integrated farm woodland offer a viable and cost-effective way to enhance tree planting across Scotland, without reducing agricultural production and, therefore, offshoring the impacts of the food system. In addition, there is potential to enhance the performance and resilience of food production. Awareness of these benefits across the farming, public and private sectors is increasing, however, implementation lags behind the policy case. The reasons for this need to be understood and responded to, and the issues tackled.



'An additional 342,000 hectares of new woodland cover for Scotland by 2050'

The situation in Scotland

There are reported to be 546,000 hectares of woodland on farm currently in Scotland, which is more than one-third of all woodland in Scotland. However, despite the acknowledged benefits, integration of the management of this woodland into the farming system, and uptake of agroforestry in particular, has been limited.

Part of the problem has been the lack of financial support for the up-front capital costs. However, the barriers are higher than simply funding and include wider decision-making concerns for farmers and practical implementation issues.

The Scottish Forestry Grant Scheme (SFGS) provides relatively generous funding for woodland scale planting, with some opportunities to flex the scheme to support small group planting, shelterbelts and riparian strips. However, the scheme is primarily focused on the forestry sector and can be complex for farmers to navigate. Although there are two agroforestry options within the current grant scheme, these are limited to better land and are based on individual tree protection in low density plantings, which collectively rules out many agroforestry systems for Scottish farmers.

The Scottish Government is working towards a replacement for the Common Agricultural Policy, with new legislation due to be in place for implementation in 2026. The government's Vision for Agriculture document published

Farm Type	Total Farm type area (ha.) in Scotland	Area of agroforestry or farm woodland based on %age allocation by farm type				Total farm type footprint (ha.)	Total net cost/farm type (£)
		Silvoarable/ Silvopasture	Silvopasture (shelter only)	Shelterbelts	Mixed Farm Woodland		
Cereals	469,100	@1% = 4,691ha.		@1% = 4,691ha.		9,382ha.	-£1,219,660
		@ -£1,346,317		@+£126,657			
Dairy	104,722		@5% =5,236ha.	@1% = 1,047ha.		6,283ha.	+£704,744
			@+£591,668	@+£113,076			
LFA grazing	3,192,072		@5%= 159,603ha.	@1%= 31,920ha.	@5%= 159,603ha.	351,126ha.	-£54,280,962
			@-£1,995,045	@-£1,372,560	@-£50,913,357		
Lowland grazing	1,209,375	@1%= 12,093ha.	@5%= 60,468ha.	@1%= 12,093ha.	5%= 60,468ha.	145,122ha.	-£45,435,636
		@-£423,255	@-£3,567,612	@+£36,279	@-£41,481,048		
Overall woodland and canopy cover area		@30% = 5,035ha.	@30% = 67,592ha.	@100% = 49,751ha.	@100% = 220,071ha.		Total net cost = - £100,023,151
		Total in-field agroforestry canopy area = 72,627ha.		Total farm woodland area ³ = 269,822ha.			

2. Agroforestry systems assumed 30% canopy cover at maturity 3. Farm woodland systems assumed 100% canopy cover

in March 2022 said that integrating trees on farms would be part of an 'evidence-based, outcomes focussed' approach to 'deliver wider benefits through nature restoration'. The detail of how that ambition will be delivered will be vital in overcoming barriers to the uptake of agroforestry and more widespread planting of farm woodland.

There is increasing interest from private finance in the potential for monetising carbon sequestration based on agricultural land use change. This may provide some opportunities for farmers but also poses risks, in distorting the land use market and the ability for agriculture to achieve its own net zero responsibilities.

An agroforestry and farm woodland scenario for Scotland

The economic model highlighted is constructed using partial budgets; it estimates the change in net income that will occur if a percentage of the area of each farm type is changed to an agroforestry or farm woodland system.

These changes include positive e.g. enhanced productivity, as well as negative e.g. loss of production and capital costs. This change in net income is calculated on a per hectare basis and then extrapolated across the entire area for each farm type to get the macro-economic impact on the Scottish agricultural economy.

A hypothetical scenario was created to view various farm types with differing percentages of agroforestry and farm woodland systems (see table above). This scenario offers several key insights. Strategically, the model demonstrates that, based on a modest allocation (in the range of 1-5%) of farm type to agroforestry or farm woodland, 342,000 hectares of new woodland and woodland canopy outside woodlands could be created by 2050, without significant disruption to farm tenure. That would represent more than two thirds (68%) of the Scottish Government target for that period, based on the 18,000 hectare per year ambition.

At a more granular level, the model demonstrates the following:

- Once the capital costs for agroforestry and farm woodland are funded, most of the systems deliver positive long-term economic performance.
- Shelterbelts perform very well due to the inherent productivity gains for livestock and crops from the amelioration of extreme cold and heat.
- Despite the potentially positive impacts of silvopastoral systems based on our modelling, this is the scenario that is least supported by policy payments in Scotland. Current policy payments provide farmers with a negligible proportion of the income foregone from establishing a silvopastoral system. In contrast, support provides at least a quarter of the income foregone for the shelterbelt and farm woodland scenarios.
- The farm type which fared the best was dairy. There was a particularly striking increase in dairy income with the adoption of shelterbelts. This is because the proportional gains to productivity lead to a higher increase in income relative to costs. Practical benefits for dairy production include the fact that cows in shade during extreme weather have lower levels of thermal stress and can yield higher levels of milk.
- The worst performing but currently best supported system is the establishment of farm woodland. This is because the model assumes a complete loss of agricultural incomes from the area, combined with high upfront establishment costs and ongoing maintenance costs that are not compensated for by the timber income. The evidence base for enhanced productivity from full integration of woodland into the farm system is still weak, and therefore not currently included in the model. Therefore, without the support payments, conversion of agricultural land to woodland is not an attractive option for most farmers.
- Carbon payments and price will have a considerable impact on which kinds of land use are incentivised. For the farm woodland and shelterbelt options, reflecting the prices in the Woodland Carbon Code protocols would help redress the loss of income from agricultural production.

‘More than one third of all Scottish woodland is on farm’

Recommendations

Increasing woodland and canopy cover on farm requires an approach that reflects the realities that farmers face – this means that the existing trees and woodlands on a farm should be the starting point, as farmers are already significant woodland owners, with more than one-third of woodland in Scotland on farm. General policy themes should be integration, whole system planning and confidence building.

This will necessitate:

- Improving the consistency of policy and support for agroforestry, as well as improving the approach to defining and measuring implementation. As the model demonstrates, once the capital costs for agroforestry and farm woodland are funded, most of the systems deliver long-term performance. SFGS provides generous support for farm woodlands, the same is now needed for agroforestry.
- Basing policy support schemes on both income foregone and the value of the public goods provided by these systems. Blended private funding sources will help provide an effective way to compensate land managers for these public goods.
- Adoption of whole farm planning that assesses the woody assets already on-farm and supports their integration into the farming system. All regulation and public payments for all trees on farms should be based on this whole farm plan and be accessed via a single source in future.
- A regulatory framework for trees on farms that reflects integration opportunities and allows farmers to build trees into the rotation, or layer their systems, e.g. controlled livestock grazing in woodlands, whilst balancing the requirement for permanence of some systems such as wood pasture.
- Rewarding farmers for the existing and enhanced public benefits that are being provided by the trees on their farm, to help build confidence that public benefits will be rewarded in the long-term.
- Capacity building and knowledge transfer so that farmers build confidence as ‘tree farmers’ and foresters help make farm forestry viable on behalf of farmers.
- Support for the technical development necessary to better deal with scale issues on farm, for instance the costs of production and processing and investment in market development issues, relevant to agroforestry and farm woodland systems.
- The whole farm approach for public funding should also be the basis for accessing private payments for natural capital. Government has an important role in establishing the governance framework for these voluntary markets.
- While the model does not currently include crofts as a farm type, the integration of trees and woodlands into crofting systems offers significant opportunities for crofters and therefore grants should be made available for these systems under the Crofting Agricultural Grant Scheme.

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