Trees and woodland in the farmed landscape:

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

Soil Association

Introduction

The public policy benefits of trees in our farmed landscape are increasingly understood and accepted.
Indeed, the Government is proposing Environment Plan targets for England that would include both conventional woodland cover and tree canopy cover outside of woodland, including agroforestry options such as orchards, small woods, trees in hedgerows and in-field trees in silvoarable and silvopasture systems. These are welcome developments but targets alone are not enough to achieve the ambition for woodland and tree canopy cover to increase in England from the current 14.5%, to 17.5% by 2050.

Given the extent of the farmed landscape in England, farmers will be crucial to the achievement of these targets and there will need to be widespread adoption across a range of farm types to get close to this 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 England. 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 England that would deliver 355,000 hectares through a farmer led approach, which is most of the proposed increase in woodland and woodland canopy cover of 420,000 hectares by 2050. The change in net farm income from this scale of delivery is modelled as an annual cost of £90 million, which is a small fraction of the annual £1.6 billion currently spent on farm support. The briefing concludes by making recommendations for actions by policy makers 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.

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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 UK food production.

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 England, 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 and 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 England, without reducing agricultural production and, therefore, offshoring the impacts of the UK food system. In addition, there is potential to enhance the performance and resilience of UK 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 355,000 hectares of new woodland cover for England by 2050’

The situation in England

Despite the acknowledged benefits, 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 England Woodland Creation Offer (EWCO) 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 complex to navigate, does not support in-field tree planting and no agricultural activity is allowed in EWCO funded woodland, which collectively rules out many agroforestry systems.

The Countryside Stewardship scheme does offer some options that relate to agroforestry despite the term not being explicitly mentioned in the guidance. These include wood pasture creation and funding for single trees on farmland.

The three new Environmental Land Management (ELM) schemes all have potential elements of agroforestry and woodland creation within the current designs. The Secretary of State has committed to improving on income foregone systems of payment to maximise incentives for farmers, and this will be important 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.

Farm Type	Total Farm type area (ha.) in England	Area of agroforestry or farm woodland based on %age allocation by farm type					Total farm type allocation (ha.)	Total change in farm type net annual income (£)
		Orchards	Silvoarable/ Silvopasture	Silvopasture (shelter only)	Shelterbelts	Mixed Farm Woodland		
Poultry – free range	11,314			@ 50% = 5657ha.			5,657ha.	+£16,971
Cereals	2,629,637	@1% = 26,296ha.	@1% = 26,296ha.		@1% = 26,296ha.		78,888ha.	-£9,782,112
Dairy	983,542		@5% = 49,177ha.	@10% =98,354ha.	@1% = 9,835ha.		157,366ha.	+£16,434,905
LFA grazing	1,190,402			@5%= 59,520ha.	@1%= 11,904ha.	@10%= 119,040ha.	190,464ha.	-£53,139,456
Lowland grazing	1,208,771		@5%= 60,438ha.	@5%= 60,438ha.	@1%= 12,087ha.	5%= 60,438ha.	193,401ha.	-£43,853,805
Total	6,023,666 ha.						625,776 ha.	-£90,323,497
Overall woodland and canopy cover area		Total in-field agroforestry canopy area[2] = 115,851ha.			Total farm woodland area[3] = 239,600ha.			

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

An agroforestry and farm woodland scenario for England

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 English 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 of farm type to agroforestry or farm woodland, more than 80% of the proposed Environment Plan target of 420,000 hectares of new woodland/new woodland canopy by 2050, could be achieved, without significant disruption to farm tenure.

Although some of the systems deliver a positive economic case over the medium-term without significant off-farm public or private payments, as a whole scenario, financial support will be vital to achieve this level of uptake (circa. £90 million/annum through to 2050).

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

- 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 England. Current policy payments provide farmers with a negligible proportion of the income forgone 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 complete loss of agricultural incomes from the area is modelled, combined with high upfront establishment costs and ongoing maintenance costs are not compensated for by the timber income. In addition, the evidence base for enhanced productivity from full integration of woodland into the farm system is 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 woodland in England 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 England on farm. General policy themes should be integration, whole system planning and confidence building.

This will necessitate:

- Addressing the currently inconsistent 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. EWCO provides generous support for farm woodlands, the same is now needed for agroforestry.
- Basing policy support schemes on both income forgone 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.

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