

Agroforestry approaches - actions to increase tree cover in the North East of England

BACKGROUND

Agroforestry is the intentional integration of trees on agricultural land to provide additional sources of income and a range of social and environmental benefits (1). Farmed land makes up 71% of the UK and is invaluable for meeting the Government's Net-Zero strategy by 2050 (2). In the Government's 25-year environment plan agroforestry is a key mechanism for achieving 12% tree cover across England by 2060 (3) and supporting woodland creation initiatives such as the Great Northumberland Forest. These strategies aim to use agroforestry as a tool to mitigate climate change (4), increase agricultural productivity (5), improve livestock welfare and biodiversity (6,7), and reduce the risk of flooding (8). Despite this, agroforestry has been underexplored, especially in the North East. Whilst there are increasingly more funding options and resources available, there are still multiple barriers limiting the uptake of agroforestry. DEFRA has suggested participative research methods could be a vital mechanism to overcome this (9). This report synthesises participatory research findings examining the potential for agroforestry in the North East of England alongside relevant scientific literature. We suggest four policy priority actions based on farm visits, stakeholder interviews and a workshop with farmers and stakeholder representatives.

KEY FINDINGS

1. There is a lack of clarity from participants on what constitutes agroforestry, especially in the context of government incentives.
2. Interviewed farmers were mainly interested in planting trees as silvopastoral (trees and livestock) systems, in varying configurations across their holding.
3. Agroforestry can be seen as an integral part of integrated farm management, linking to strategies such as reducing farm inputs and converting to rotational grazing systems.
4. Farmers desired flexible funding and tailored, accessible advice streams to fit the context and encourage innovation.
5. Sapling protection from livestock, deer and hares was described as a big challenge for establishment and costs.



POLICY RECOMMENDATIONS

1. Promote knowledge of the different agroforestry types in the UK

- Support creation of agroforestry demonstration farm(s) that showcase the link to integrated farm management, e.g. agroforestry in a rotational grazing system.
- Support creation of a North East practitioner group that outline attributes of representative agroforestry farms, including how agroforestry is possible in a tenanted farming context.

2. Ensure integration of government policies relating to agriculture and land use

- Harmonise government policies and grant schemes to maximise uptake of agroforestry as a natural capital opportunity (e.g. microclimate, soil quality, CO2 sequestration) across the farm.
- Include agroforestry in Local Nature Recovery and Landscape Recovery schemes, as an additional tool to be used for nature recovery across farms and the wider landscape.

3. Increase and maintain funding for agroforestry as part of integrated farm management

- Support the assessment of natural capital opportunities that include agroforestry options to catalyse private sector investment streams.
- Explore funding streams to allow farming and agroforestry innovation projects in the North East.

- Support scientific research into effects on livestock, crop and soil health, the direct and indirect economics of agroforestry, carbon sequestration potential, and cost-effective methods of sapling protection.

4. Make advice for farmers tailored and easily available

- Support increased availability and visibility of agroforestry advice through support of a North East Practitioner group to encourage local knowledge exchange.
- Support farmers through advice on how to deliver natural capital benefits to their farm, of which agroforestry is one option part of a wider package.
- Advice linked to the Environmental Land Management Policies should cover agroforestry options for a broad range of objectives to allow farmers to make more informed decisions based on their personal motivations.
- Develop clear advice for information and advice around silvopasture and tree protection.
- Acknowledge potential trade-offs farmers may experience when implementing agroforestry to ensure farmers can plan accordingly.

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STUDY APPROACH

This project was a collaboration between Newcastle University, the Forestry Commission, and the Great Northumberland Forest from April-June 2022. We conducted 13 farm visits across Northumberland, eight stakeholder interviews and a stakeholder workshop to understand how farmers see incorporating agroforestry as part of their farming practices. All participating farmers were interested in growing trees on their farm and can be considered receptive to agroforestry practices. We visited one arable, eight livestock, two mixed, two dairy farms, ranging from 128 to 1000 hectares and two farms were within Northumberland National Park. We interviewed two women, two couples and nine men, two of which were farm managers, three tenants and eight owner occupiers. Stakeholder interviews were with representatives from DEFRA, North York Moors, North Pennines Area of Natural Beauty, Northumberland County Council Climate Team, Tenant Farmers' Association, Tyne Rivers Trust, Natural England, and the Woodland Trust.

STUDY OUTCOMES

Definition of Agroforestry

Some participants had broad definitions for agroforestry, while others considered it as integrating patches of woodland within the farm. Few referred to hedgerows, despite being the most common agroforestry form in England (10). Silvopastoral systems were most desired reflecting most participants having livestock systems, specifically parkland style and low density planting. Other interests included expanding woodland areas, shelterbelts and connecting hedgerows. All participants usually wanted to plant native broadleaf species.

Motivations for tree planting

Farmers saw agroforestry as a part of integrated farm management, linking to wider strategies of reducing inputs and switching to rotational grazing systems. Many participants wanted to graze their animals outside for longer to reduce input reliance and overwintering costs. Some saw trees as a tool to divide large fields into smaller parcels to make it easier when rotating their livestock. A key driver of this was the potential benefits to livestock health and thus farm productivity and resilience from enhanced shade, shelter, and nutrition. There is some support for these benefits by literature (11,12) and certain trees can serve as fodder as well as a source of minerals (13). The need for buffering livestock from heat stress may be expected to increase with climate change (14,15). Due to this link of agroforestry to farm-scale management, most participants were interested in multiple types of agroforestry across their holding, depending on the spatial context.

Financial motivations focussed on current and future subsidy schemes. No participant considered a direct economic benefit from their trees (e.g. timber or fruit). Usually because of the small-scale nature of the planting being perceived economically unviable, or lack of a local market. One tenant farmer described subsidies as the only financial benefit he would get from agroforestry, which appears to be a view held by farmers in other parts of UK as well (16). Another tenant indicated agroforestry would not be viable on their five year farm business tenancy. Farmers recognised very general environmental benefits such as, "increase biodiversity" and, "connecting patches" of habitat, which influenced desired agroforestry sites, but was not usually the primary motivation. Other motivations included a sense of stewardship over the land, returning historical aspects and aesthetic value.

Flexibility of funding

Advice and financial challenges were the more prevalent barriers to agroforestry, as is the case for UK (17) and Europe in general (5,16). Financial challenges include time and capital costs of planting and fencing. Participants were divided on the prospect of private carbon financing. Some saw this as a potential avenue for farm diversification and funding, particularly if it covered agroforestry. Others were more sceptical, with one participant expressing it as



"morally reprehensible" and another expressing tension between using land for carbon and tree planting targets instead of agriculture for food security.

A key outcome of the work was the desire for flexibility of grant funding to ensure planting fitted the farming context. All participants were in agro-environment schemes and some voiced that this locked their land into certain management regimes that prevented agroforestry innovation. Many participants expressed that there was a lack of grant schemes that allowed for lower planting densities.

Tailored advice

Farmers expressed need for access to bespoke advice on what and where to plant, protection of saplings, management, and marketing of any products. Some participants expressed they had received top-down advice that was not reflective of their context or their motivations for planting. Others were concerned of planting amidst future climate change impacts. The data also suggest an issue of stakeholder connectivity and a knowledge gap of where to seek advice, rather than availability itself. In line with this, farmer-to-farmer learning, through meetings and demonstration plots, can be effective to encourage adoption of agroforestry practices (18).

Increasing sapling survival

The need for sapling protection from trampling and browsing by livestock, deer and hares was described as important. Tree damage reduces establishment, increasing management costs (19) and supply pressure on local tree nurseries (20). Participants voiced that deer populations have increased in recent years, reflective of known increase in deer range and abundance throughout UK (21). One farmer linked this to heightened tick infestations in their livestock. This perception is a common among British farmers (22) but evidence is currently inconclusive (23,24).

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