Agroforestry

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A range of government agencies have promoted the uptake of UK agroforestry as a multifunctional land use. This policy brief summaries the benefits of agroforestry, the opportunities it creates, and barriers to its uptake.

Background

Agroforestry refers to growing trees among crops or livestock.[1] It is a historic land use practice in the UK, with traditional agroforestry including wood pastures, using leaf fodder for livestock feed and/or wood fuel, and orchard grazing.[2] Intensification of agriculture and a shift to monoculture farming means that it is no longer a dominant UK farming practice.[3]

The UK is facing increasing environmental issues such as flooding, biodiversity loss, land degradation, and poor air and water quality.[4,5] The COVID-19 pandemic also highlighted the importance of resilience in the agricultural sector.[6]

There is now a renewed emphasis on managing land in a way that protects or improves the environment.[7] Research suggests agroforestry, as part of a viable working landscape, holds the potential to help restore natural capital and help the UK adapt to and mitigate against climate change.[1,8]

There is evidence that integrating trees into farming systems can provide a number of ecosystem services alongside benefits to productivity, improved diversification of food, and fuel security.[2]

Overview

- Agroforestry is the integration of agriculture and forestry.
- Agroforestry can improve a farm's resilience by increasing productivity, improving soil quality, reducing flood risk, providing shelter for crops and livestock, and diversifying farm income.
- Agroforestry provides further environmental benefits through carbon sequestration and improved biodiversity.
- Policy reforms to pay 'public money for the provision of environmental public goods' makes agroforestry a viable land use practice.
- Agroforestry is not widely practiced in UK farming and there is not yet a fully developed agroforestry policy incentive.

Definitions

Agroforestry: an intensive farming system where trees are combined with crops and/or livestock to benefit from the resulting ecological and economic interactions.[9]

The key modern agroforestry practices are:
Silvopasture: combining trees and livestock
Silvoarable: combining trees and crops

Figure 1. Agroforestry options in the UK: a) wind breaks, b) riverine buffers, c) tree rows, d) single trees, e) tree clusters[1]
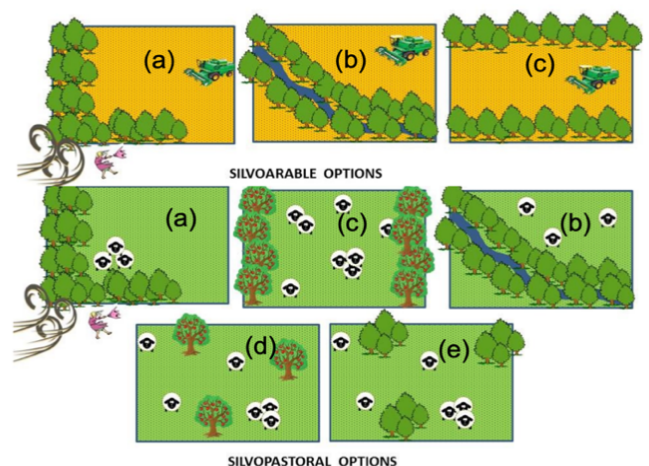
Box 1: Silvopasture Case Study: Woodland Eggs

Sainsbury's stock eggs from woodland hens. This is an example where consumers are willing to pay premium for an agroforestry product due to enhanced animal welfare[10]. Trees enable hens to exhibit more natural behaviour, and woodland cover can improve eggshell quality and increase laying rates.[10,11]

Photo: Sainsbury's

Benefits of agroforestry

Biodiversity, pollination and provision of habitat. Increased species richness and abundance (including pollinators[12]) compared with conventional agriculture and forestry.[13,14] Potential for Nature Recovery Networks with increased provision of wildlife habitat and creation of connectivity corridors.[8]

Soil enrichment and nutrient cycling. Trees enhance and maintain long-term soil quality.[8]

Erosion and flood control. Tree roots stabilise soil to reduce erosion.[13] Higher water infiltration into soil mitigates flood risk.[10,15]

Productivity increases and economic diversification. Complimentary resource capture by producing two commodities on the same unit of land e.g. crops and woodchips.[2,16,17]

Animal welfare. Provides shelter, enhances welfare and reduces livestock suffering during extreme weather events.[10]

Improved food and fuel security. Marketing quality and diversified products.[10] Opportunity to develop a strong domestic market for disease free wood stock, removing the need for imported materials, and allowing farmers to trade verified carbon credits.[1]

Reduced pesticide use. Reduced farming costs through minimising nutrient losses, maximising nutrient cycling and enhancing

pest and disease control by housing natural predators.[2]

Cultural heritage values. Increase in cultural and aesthetic value, opportunity to plant native trees and historic orchards to maintain and restore landscape character.[13]

Climate regulation and carbon storage. Provide wind break, local cooling effect and a lower fire risk compared with forestry.[2,13] Carbon capture and producing homegrown biofuels.[1] Restore and protect degraded peatland to reduce carbon emissions.[10]

Box 2: Silvoarable Case Study: Apple Trees and Cereal

An organic cereal farm near Peterborough (eastern England), grows rows of apple trees and wildflower strips planted at intervals between the cereal crops.[10] Agroforestry here increases land productivity, produces an additional crop and restores and stabilises the peatland soil, helping to reduce carbon emissions.[10]

Photo: Stephen Briggs.[10]

Barriers to agroforestry uptake

Lack of clarity over the definition of agroforestry[18,19], limiting uptake where it fails to qualify under either agricultural or forestry payments.[2,3]

Increased costs for labour, management and maintenance and a greater administrative burden, alongside long timescales for economic returns.[1,19]

Tenancy farmers faced with logistical and ownership challenges if agroforestry establishment is longer than the longevity of farm tenancies.[1]

Knowledge gap with farmers lacking the knowledge or access to expert advice on woodland creation and management.[20]

Box 3: Relevant Policy Incentives and Climate Change Commitments

The UK government has committed to increasing woodland in England, pledging to plant 30,000 hectares of forests by 2025, alongside achieving net zero carbon emissions by 2050.[20] Conversion of 0.6% of agricultural land to agroforestry would contribute significantly towards these targets[21].

Current and developing policy frameworks to facilitate these targets and meet further environmental and economic targets include:

- Woodland Carbon Guarantee.[22]
- Common Agricultural Policy and the transition to the Environmental Land Management scheme.[23]
- Nature for Climate Fund.[24]
- Countryside Stewardship.[25]
- Environmental Stewardship.[26]
- Trees for your Farm Scheme.[27]

Facilitating agroforestry uptake

- Clear definition of agroforestry to be included in policy for subsidies and grants e.g. inclusion in the Agricultural Bill and forthcoming Environmental Bill and Environmental Land Management scheme.[1]
- Demonstration of economic viability and practical management of agroforestry to farmers.[19]
- Promoting knowledge transfer and enabling collaboration between multiple sectors[20].
- Business advice, especially for vulnerable high nature value farms (HNVF).[28]
- Developing a market in natural capital and biodiversity net gain as an incentive for adoption and management of agroforestry.[29]
- Securing and rewarding public goods from agroforestry and ensuring long-term changes in land use.[28]

Endnotes

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