

Agroforestry systems

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Systems



Modern agroforestry systems are classified according to the components present – trees with crops are referred to as silvoarable, trees and animals as silvopastoral, and trees with crops and animals as agro-silvopastoral. Two specialised systems include entomoforestry (trees with insects e.g. honey bees or silk moths) and aquaforestry (trees with fish e.g. mangroves or trees round ponds so leaf litter enriches the water for fish production).

Agroforestry systems have traditionally been important elements of temperate regions around the world, evolving from shifting cultivation towards more settled systems involving agriculture, woodland grazing and silvopasture, with fertility transfer from woodlands to cultivated land via manure. In the UK, traditional agroforestry systems include wood pastures such as the New Forest, browsing of acorns and beech mast (pannage), parklands, pollarding, orchard grazing and hedgerows.

Modern agroforestry in the UK is mostly still at the experimental stage, with a number of trial sites established across the UK during the late 1980's, including a network of six silvopastoral systems set up by the UK Agroforestry Research Forum (now the [Farm Woodland Forum](#)).

There are only a few examples of organic [agroforestry farms in the UK](#). The Organic Research Centre currently carries out research at three sites: Wakelyns Agroforestry in Suffolk; Sheepdrove Organic Farm, Berkshire; and Whitehall Farm, Cambridgeshire.

Agroforestry system components

Agroforestry systems can be made up of many different woody components (as well as the



livestock and crop components).

- Alley cropping - rows of trees (either standards or coppice) in between alleys of crops or pasture.
- Hedges
- Shelter belts
- Trees and woodland round riparian zones
- All types of woodland areas – coppice woodland, woodland with standards, and coppice woodlands with standards
- Orchards
- Grazed woodland
- Trees in pasture
- Pollards

In an agroforestry system all woody components should be fully integrated into the agricultural production system. The woody components should have a beneficial ecological impact on the land and other system components (i.e. livestock and crops). Through management, it should also be possible to gain an economic profit from the woody components either directly by selling products (see below), or indirectly from the woody components having a beneficial effect on other system components (i.e. the shelterbelt producing higher yielding crops or sheep)

Furthermore for an Eco-Agroforestry approach, diversity should exist on all levels of the system.

- Within species diversity of trees, crops and livestock
- Diversity of tree, crops and livestock species
- Diversity of system components at the landscape level



Benefits

Trees in agroforestry systems modify microclimatic conditions including temperature, water vapour content of air and wind speed, which can have beneficial effects on crop growth and animal welfare. Additionally a wide range of other services can be provided including:

- Soil management
- Weed control
- Natural fencing
- Carbon sequestration
- Nutrient recycling



By minimising nutrient losses and maximising internal cycling of nutrients, and by enhancing pest and disease control, agroforestry systems reduce the need for agrochemical inputs. Agroforestry has a further role in protecting the environment and providing a number of ecosystem services, such benefits include:

- Regulation of soil, water and air quality
- Enhancement of biodiversity
- Climate change mitigation and adaptation



Products

Agroforestry systems support the production of a wide range of products including:

- Food
- Fuel
- Timber
- Fodder and forage
- Fibre
- Gums and resins
- Thatching and hedging materials
- Gardening materials
- Medicinal products
- Craft products
- Recreation
- Ecological services

The stack of photos shows a short rotation coppice/potato silvorable system at Wakelyns agroforestry. The short rotation hazel coppice is for energy, from field to wood chip boiler.

These products can impact the local economy through increasing;

- Economic stability
- Diversification of local products and economies
- Diversification of rural skills
- Improved food and fuel security
- Improvements to the cultural and natural environment
- Landscape diversification

For more detailed information on all the benefits of agroforestry, read the paper [**Agroforestry: Reconciling Productivity with Protection of the Environment.**](#)

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