Agroforestry/orchards systems guide

1   Windbreaks/shelterbelts

Description: Line or strip of trees along field/paddock boundary
Benefits: Shelter, shade, soil protection, browse & timber
Tree species: mixed species, including Lombardy poplar, alder, western red cedar and scots pine
Tree protection: wire fencing and individual tree guards

Case study: Upper Stapeley Farm, White Grit. In late 2022 the farmer planted 400 trees in a 200m shelterbelt on her upland sheep farm near the welsh border. The tree species included sessile oak, aspen, silver birch, scots pine, and holly and western red cedar on the leeward side. The tree species planted were selected specifically for providing shelter on an exposed upland site.

The farmer expects that the shelter belt will provide much needed shelter to her flock of welsh mountain sheep, improving productivity in terms of live weight gain and animal welfare, as well as reducing lamb mortality because of reduced wind speeds and the resulting increased temperatures.

2   Silvopoultry

Description: Poultry under trees or between lines of trees
Benefits: Shade, shelter, natural animal behaviour and additional tree crops
Tree species: mixed trees, including fruit, nuts and timber species
Tree protection: individual tree guards

Case study: Moore farm, Baschurch. The farmer has planted a traditional orchard of 57 mixed fruit trees, under which he will keep free range hens for egg production.

3   Wood pasture

Description: Livestock under widely spaced grazeable woodland trees
Benefits: Shelter, shade and browse
Tree species: Willow, alder, rowan, oak, hazel, lime, hornbeam, crab apple, scots pine, walnut, alder buckthorn, wild service tree, cherry, birch & hawthorn
Tree protection: Fencing and individual tree guards. Can keep the stock out until the trees are more established

Case study: Whitegates Farm, Whitchurch. The farmer planted 200 trees on her farm near Wem in 2021. The tree species including oak, willow, alder, hazel, lime, hornbeam and scots pine were planted in a wide strip along the south west boundary of one of her larger fields used for grazing cattle. The trees were planted more widely apart than in a traditional plantation to allow access by the cattle for shelter and to browse the trees. Initially the trees have been fenced off from the main pasture until the trees are more established and can survive browsing and rubbing from the cattle.

The farmer hopes that the wood pasture will provide more shelter for her cattle during poor weather and allow the animals to self-medicate by browsing tree species such as willow, lime and hornbeam.

4   Parkland

Description: widely spaced standard trees in open pasture
Benefits: Shade, shelter and additional timber crop
Tree species: oak, beech, sycamore, ash and sweet chestnut
Tree protection: Post and rail or metal tree guards

Case study: The Grove, Pentre: The farmer planted six trees on his one-hectare paddock near Shrewsbury
 in December 2022. The land is used by a neighbour to graze a small flock of welsh badger faced sheep. The tree species planted were oak, alder and Sycamore and were planted at a very wide spacing as per usual in a parkland system, where the primary purpose of the trees is to provide shade and shelter for the grazing animals. An added bonus of planting the trees will be increased infiltration of surface water in a field that often floods, and increased biodiversity in terms of wildlife habitat.

5   Trees in grazed fields

Description: Rows of trees with alleys of pasture
Benefits: Shade, shelter, browse, additional tree crops
Tree species: Mixed late leafing & nitrogen fixing species, such as alder, honey locust, black locust, hornbeam and poplars. Willows, mulberry, ash & elm for browse.
Tree protection: Electric fencing and individual tree guards
Typical pasture alleys between the tree rows are 12-24m wide.

Case study: The Farm, Longnor. The landowner farms on land near the Shropshire Hills AONB, with a herd of 300 dairy cows. He has been organic since 2000 and in recent years he decided to try agroforestry for the first time and plant more trees on his farm. In 2015 with support from The Woodland Trust the farmer planted rows of willows on several fields on his farm in north south rows so as to provide additional browse and shelter for his cows. A silvopastoral system such as this can have many benefits, including:

- Browse from willow trees in high in Salicylic acid which can help alleviate pain in cows
- Shade and shelter leading to improved animal health and welfare and productivity
- Tannins in leaf forage can help reduce the need for worming treatments and cut emissions
- Increased soil health
- Improved infiltration rates
- Reduced incidence of pests and diseases from drying of land and mineral rich browse
- Supply of tree fodder and reduced associated feed costs
- Increased biodiversity

6   Trees in arable fields

Description: Rows of trees with alleys of arable crops or vegetables
Benefits: Shade, shelter, soil protection, nutrient recycling, additional tree crops, including timber, fruit & nuts
Tree species: Mixed species, including apples and other fruit, hazel for nuts or biomass, and timber species
Tree protection: Individual tree guards

The alleys between the tree rows are typically aligned north south to allow maximum light to reach the crops and are between 12 and 24m wide to allow easy access by farm machinery.

Case study: The Bradford Estate, Newport.   The estate manager has planted a ten-acre plot with nine rows of 150 apple trees with rotational ley and crop alleys between. The estate is keen to diversify production on the farm to include fruit in order to reach new markets.

Orchards

Description: Traditional widely spaced fruit trees with grass underneath, linear orchards and community orchards.
Benefits: Fruit crop and pasture
Tree species: Apple, pear, cherry, plum, damson, gages.
Tree protection: Individual tree guards or wire mesh guards if livestock present.

Case study: Harehill farm, Edgton. The landowner has planted rows of 35 mixed fruit trees as linear orchards with alleys between to be used for vegetable production.

Trees Outside Woodland

A Shared Outcomes Fund pilot in partnership with the Department for Environment, Food & Rural Affairs, The Tree Council, Natural England, Chichester District Council, Cornwall Council, Kent County Council, Norfolk County Council and Shropshire Council