

About the Project

SustainFARM is a 3 year project uniting researchers and stakeholders across 7 countries to improve the agronomic, environmental and economic performance of farming systems that integration both food and non-food production.

OBJECTIVES

- To add value to on-farm woody resources including hedgerows and agroforestry
- To identify the optimal harvest and chipping practices and final uses for wood chip from coppice
- To encourage better management of hedgerow networks and more resilient farming systems.



Factsheet

ALLEY CROPPING AND HEDGE COPPICE SYSTEMS IN EAST ANGLIA, UK



ALLEY CROPPING AND HEDGE COPPICE SYSTEMS

Alley cropping systems, consisting of hazel or willow short rotation coppice (SRC) combined with arable cropping (cereals, winter squash, lentils, camelina, quinoa, vegetables, fertility building legume ley).



Mixed species hedgerows managed by coppicing on a 15-20 year rotation.



COPPICING FOR WOOD FUEL

Coppice material can be chipped for use in a biomass boiler on farm or for onwards sale.



THE ALLEY CROPPING SYSTEM

The alley cropping system is planted as 10m crop alleys separated by 3m wide twin-rows of trees. 0.4m saplings were planted through a mypex weed control barrier with no tree protection. Within rows, hazel is planted at a spacing of 1.2m and willow 1.5m. Trees were cut back to 5cm above ground one year after planting to encourage multiple stems. Coppicing takes place Jan-Feb., when there are no leaves on the trees. Hazel is cut 5-yearly and willow biennially, but the total amount of biomass harvested from the two species over a given time period is very similar (willow 6.31t/ha/yr; hazel 6.29 t/ha/yr @ 30% moisture content).

Cutting can be done with a chainsaw or by using a machine such as a circular saw, Bracke felling head or tree shears. Preliminary trials show that tree shears offer the best value for money for a system the size of Wakelyns (6 ha managed as agroforestry). Once cut, material must be dried and chipped. This can happen in either order.



COPPICING MIXED HEDGEROWS

Hedgerows are cut simultaneous with the harvest of the SRC alleys. Like the alleys, hedgerows can be cut with a chainsaw or with a specialist machine. They are cut on a 15-20 yr cycle with standing trees left every approx. 10m. Woodchip yield from a hedgerow allowed to grow for 20 years was 11.85 t/100m (30% moisture).

Cost for cutting ranged from approx. £1/m with tree shears, £4–8/m with a small chainsaw (three men) and £2–3/m with a Bracke felling head. Including haulage and chipping, costs increased to approx. £9–11/m.

In 2016, Woodchip sold for £84/tonne (@30% moisture) through a woodfuel cooperative. Less haulage, storage and handling, this was £7.56/m.

If used directly for energy on farm, however, woodchip costs 1.6–3.5p/kWh, versus 3.8p/kWh for gas, 3.3-4.5p/kWh for heating oil and 7.4–14.5p/kWh for electricity.

A typical farmhouse boiler (30-40kW) uses 30-40t of seasoned chip/year (at 30% moisture content). This equates to 4.76– 6.35 ha of agroforestry or 250–340 m/year.

