

# PLANNING AGROFORESTRY FOR LIVESTOCK FARMING SITUATIONS

**Simeon Day**

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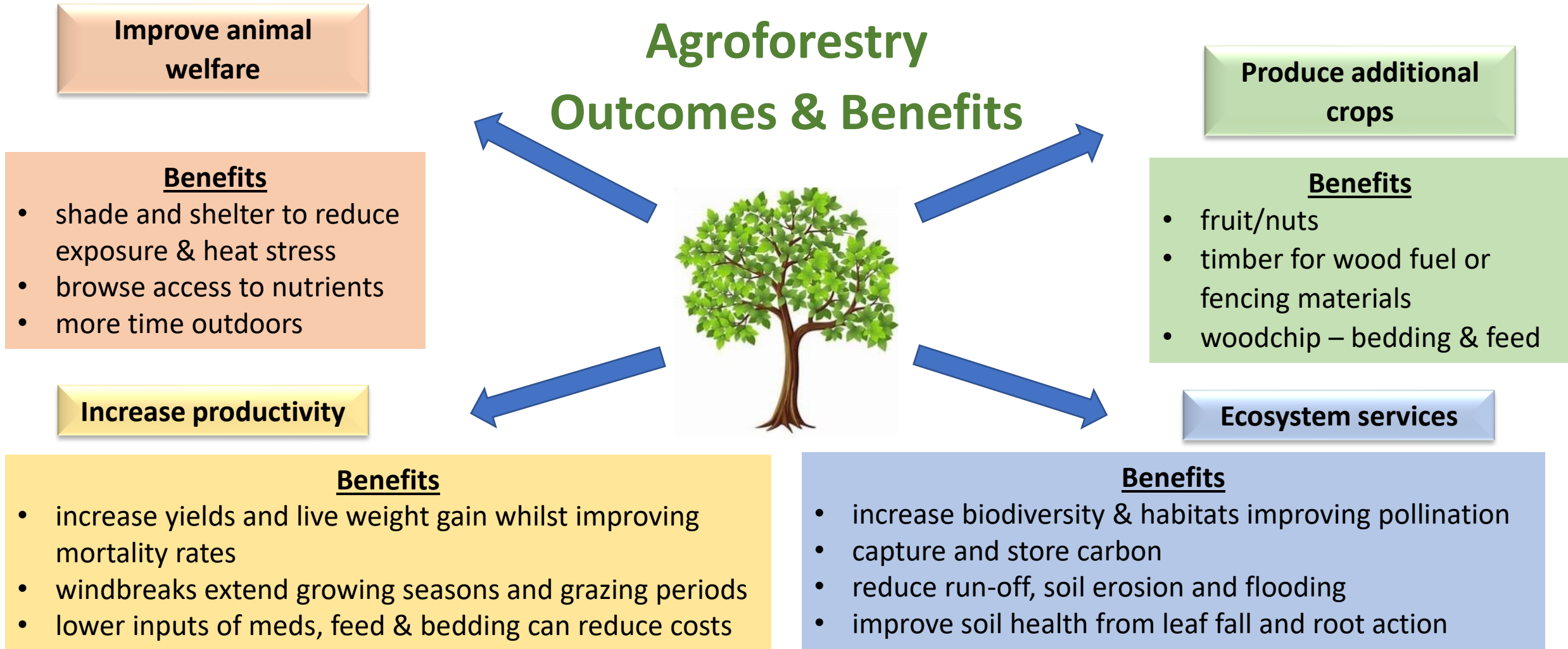
# What is Agroforestry?

A photograph of a grassy field with several trees, illustrating agroforestry. The trees are scattered across the field, and the sky is bright blue with some light clouds. The sun is visible in the upper left corner, creating a lens flare effect. The trees are green and appear to be in a well-maintained field.

Integrating trees and shrubs into the farming system  
to bring a range of benefits



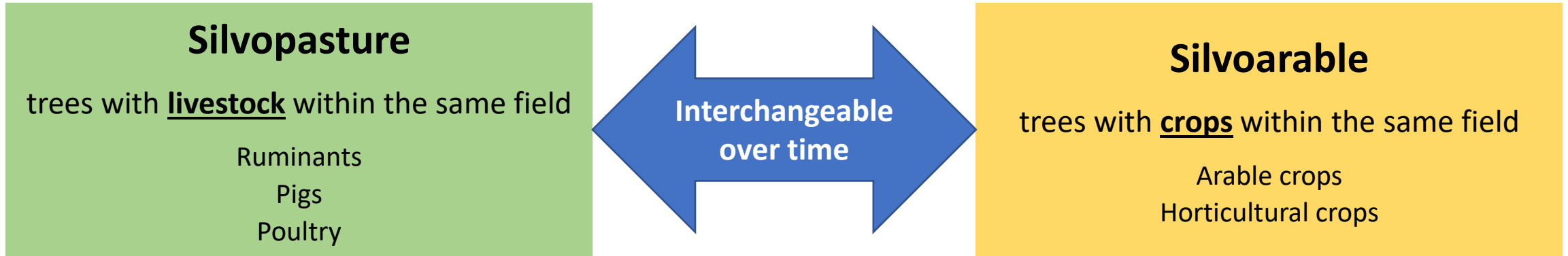
# Why Agroforestry - what can trees do for us?



**Whatever the required outcome a well planned agroforestry system will deliver all the benefits**

# How do we bring trees onto the farm

## Agroforestry Systems



**Consider agroforestry as the pattern or layout of trees – the system that is chosen to:**

- complement the existing agricultural activity
  - deliver different outcomes
    - maximise benefits
- allow tree, livestock and crop management

**Row systems**- with grazing or cropping in the alleys  
between the rows

**Cluster systems** – wood pasture

**Living Barns**

**Shelterbelts**

**Orchards** – traditional or other

**Hedgerows**

**Riparian buffer strips**

**Parkland**

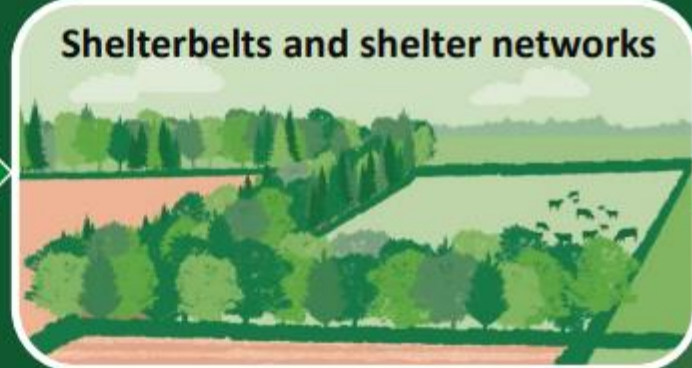
**The Agroforestry creation spectrum**



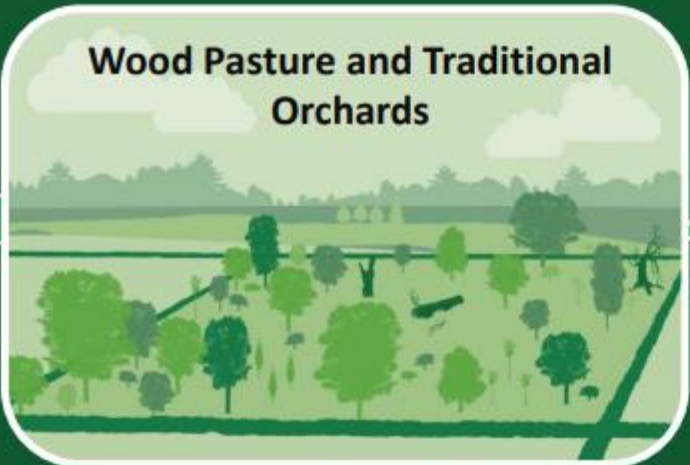
**Wide hedges and windbreaks**



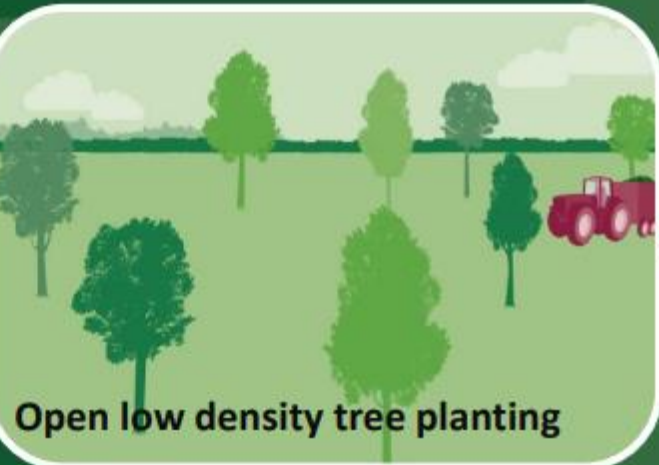
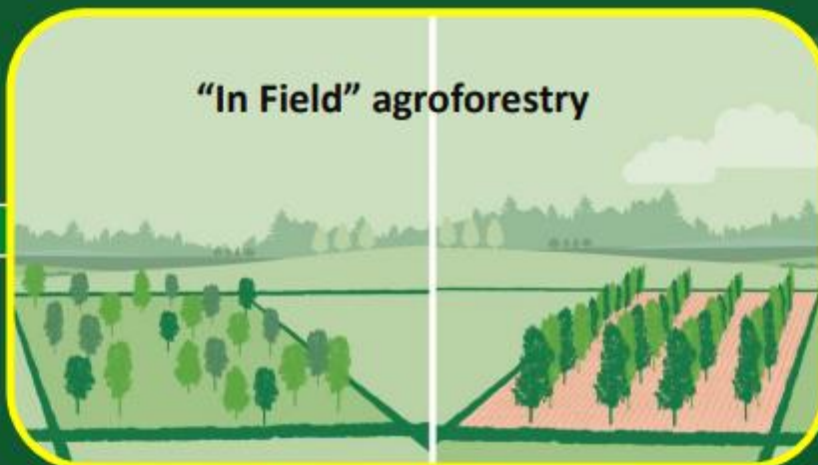
**Shelterbelts and shelter networks**



**Wood Pasture and Traditional Orchards**

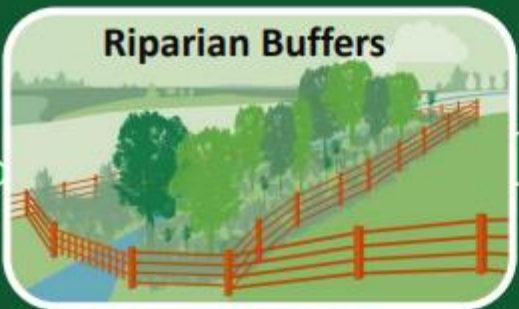


**"In Field" agroforestry**



**Open low density tree planting**

**Riparian Buffers**



**Field corners, copses, small woodlands**



**Existing Woodland:**

Introducing managed grazing into woodland

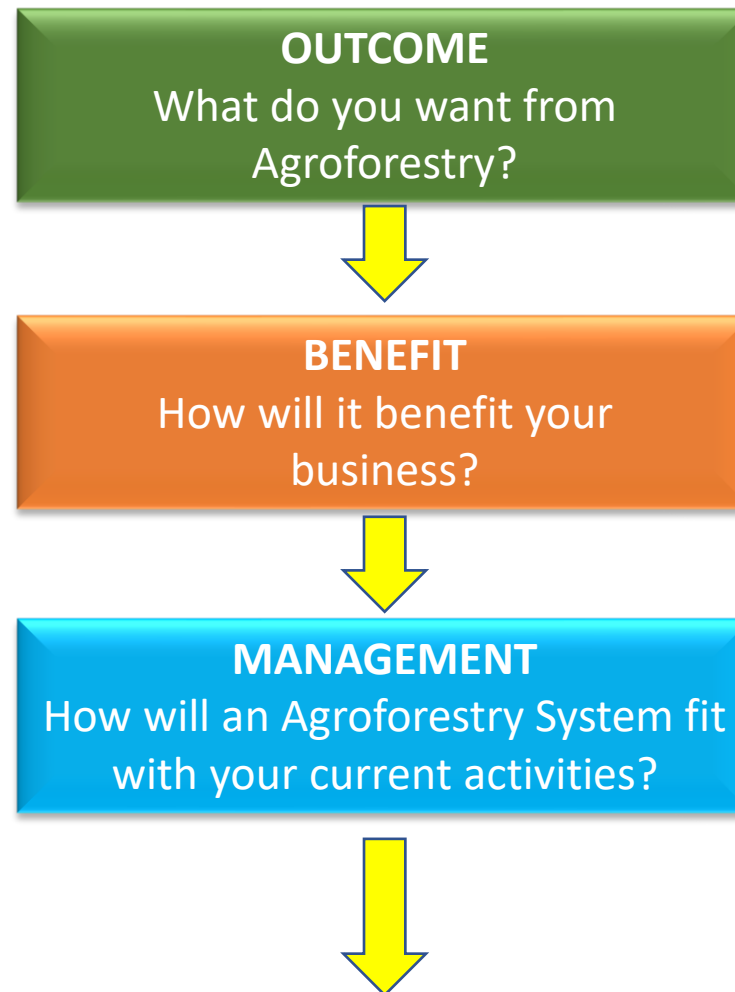
**Woodland Creation**

New woodland creation, with longer term agroforestry intention

Other agroforestry types; e.g., short rotation coppice for fodder and/or bioenergy

# Choose the right Agroforestry System for you

*Your Agroforestry scheme should have the systems that will deliver the outcomes that you want in a way that you can manage it*



# Things to Consider

- **Type of agricultural activity & method of operation**
- **Machinery sizes – minimum widths required and constraints**
- **Access restrictions – seasonality**
- **Stock access & requirements**
- **Type of crops**
- **Tree management:**
  - **Establishment and protection**
  - **Weed control**
  - **Sward management**
  - **Formative pruning**
  - **Under cropping or understorey management**
  - **Mid - Long term management: pruning, coppicing, thinning**
- **Identify tree species suitability to deliver outcome and possible risks – potential poisoning / invasive species / high maintenance**
- **Cropping from the trees:**
  - **Harvesting requirements - timing and area needed**
  - **Spacing**
  - **Harvest strip**
  - **Machinery access**
  - **Harvesting machinery required and availability**
  - **Processing machinery required and availability**
  - **Labour/skills required and availability**
  - **Contractors required and availability**
  - **Route to market**



# Create a plan

## Desktop Survey

**Soil**

**Landscape character/type**

**Designations** SSSI, SAC, SPA, LNR, NNR, NL, CWS, WHS, - Consultees

**Forestry Commission Sensitivity**

**Priority Habitats/Species** – Consultees: NE

**Landcover**

**Agricultural Land Classification**

**Catchment Area and River**

**Past land use**

**Historic Features** - Consultees

**Utilities**

## Site Survey

**Landscape**

**Topography and aspect**

**Altitude**

**Proximity to the coastline**

**Hedge network**

**Woodland**

**Streams and waterways / wetlands**

**Boundaries (walls/banks, fences, tracks etc)**

**Infrastructure e.g. pylons, buildings, solar**

**Any invasive species or biosecurity issues?**

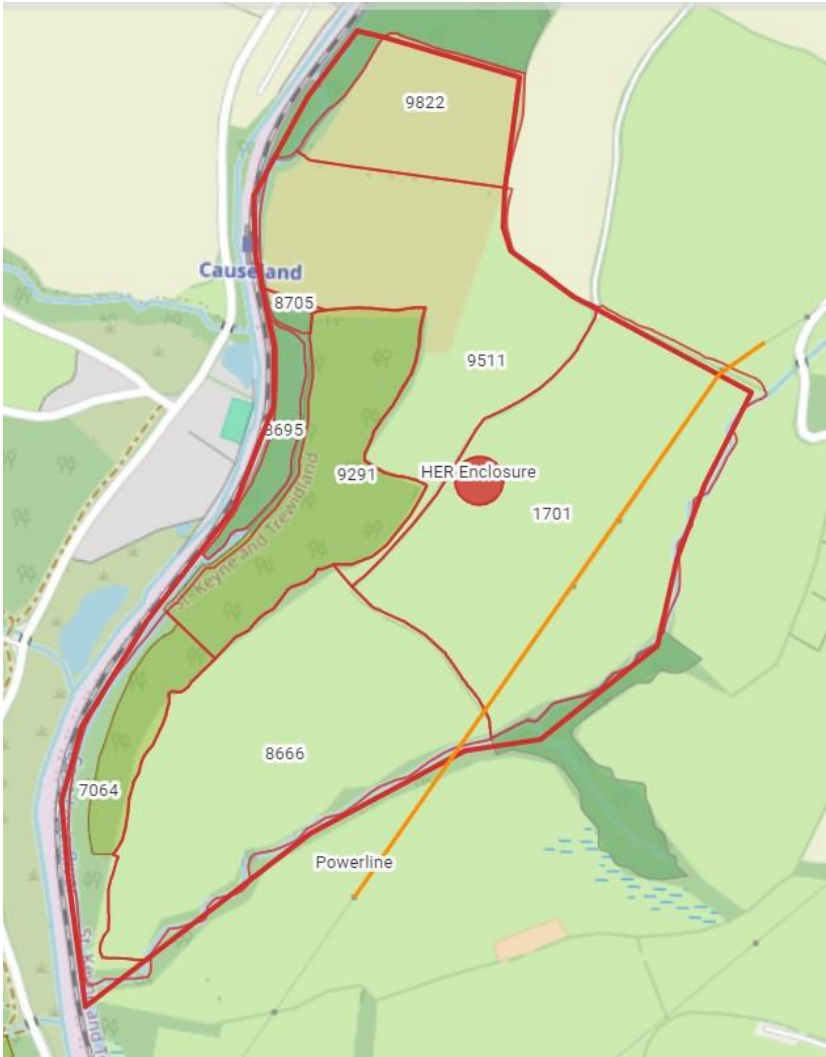


# Map your farm

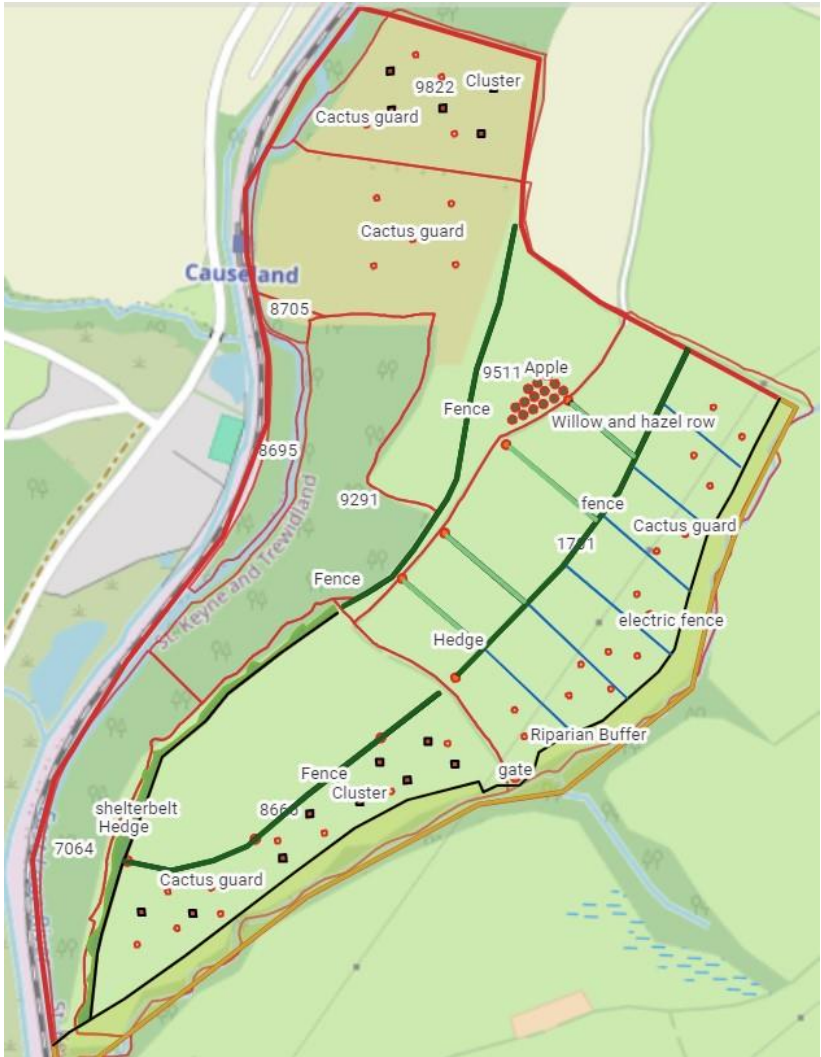
### Constraints



### Features & Habitats



### Opportunities



## Description of field parcel

Field parcel number	Field name	Parcel size in ha	Field use	Field detail (including soil type)	Features and constraints
12345	Field bordering road	4ha	Grazing (set)	Grade 3a/ brown grey soil.  Improved grassland. SE corner is particularly wet.	Small woodland along south edge of field parcel.

## Planned agroforestry

Agroforestry type and description of planned agroforestry system	Trees per ha	Total trees per parcel	Agroforestry objectives
<b>Silvopasture rows</b>  Silvopasture rows made of central Silver Birch with a row of Willow planted either side. Stock fenced around rows. Planted North-South orientation. Rows 4m wide, SBI planted centrally, each tree 3m apart. Willow planted 0.5m away from internal fence edge, 3m spacing between Willow in row. 30m spacing in between row edges.	378	1710	Mix of quality timber from Silver Birch and firewood for farmhouse. Willow for browse for livestock and improving pollinator biodiversity. Shade and shelter provided for livestock by whole row system, allowing mob grazing of rows in future.



Item	Code	Unit Cost	Field Parcel ID				Total per item
			1701	8666	9511	9822	
<b>Fruit Tree supply and plant</b> (inc spiral & labour)	TE3		0	0	10	0	10
Cost		£28.07	£0.00	£0.00	£280.70	£0.00	£280.70
<b>Maiden Tree supply and plant</b> (inc spiral & labour)	EWCO		1915	2308	1985	110	6318
Cost		£1.72	£3,293.80	£3,969.76	£3,414.20	£189.20	£10,866.96
<b>Tree Guard: tube &amp; mesh</b>	TE6		115	508	15	110	748
Cost		£3.95	£454.25	£2,006.60	£59.25	£434.50	£2,954.60
<b>Cactus Tree Guards</b> (2x cactus sheets, 3x rebar & labour to bend)	EST		15	10	15	5	45
Cost		£69.03	£1,035.45	£690.30	£1,035.45	£345.15	£3,106.35
<b>Labour fitting cactus guard per tree</b> (Est 4 per hour at £20 per hour)	EST		15	10	15	5	45
Cost		£5.00	£75.00	£50.00	£75.00	£25.00	£225.00
<b>Mulch supply</b> 1 cubic metre = 20 x 0.5m squares @ 100mm thick layer @ £2000/45 cubic metres = £2.22 per tree per year. Total of £4.44 for 2 years application	EST	per tree and per m hedge	115	508	15	110	748
Cost		£4.44	£3,010.60	£4,755.52	£2,566.60	£488.40	£10,821.12
<b>Apply Mulch Machinery</b> (tractor & driver @ £58.50/hr assuming 2x person apply mulch labour = £58.50 per hour/50 trees = £1.17 per tree per year = £2.34 per tree for 2 years application)	EST	per tree and per m hedge	115	508	15	110	748
Cost		£2.34	£969.10	£1,888.72	£735.10	£257.40	£3,850.32
<b>Apply mulch labour</b> (2x person spreading x 50 trees/hr @ £20/hr/person = £40 per hour/50 trees = £0.80 per tree per year = £1.60 per tree for 2 years application)	EST	per tree and per m hedge	115	508	15	110	748
Cost		£1.60	£684.00	£1,312.80	£524.00	£176.00	£2,696.80
<b>Sheep fencing</b>	EWCO		1610	1586	666	100	3962
Cost		£9.34	£15,037.40	£14,813.24	£6,220.44	£934.00	£37,005.08
<b>Electric Fencing</b>	EWCO		1000	0	0	0	1000
Cost		£6.38	£6,380.00	£0.00	£0.00	£0.00	£6,380.00
<b>Wooden Gate</b> (supply and install)	EWCO		9	7	3	0	19
Cost		£612.00	£5,508.00	£4,284.00	£1,836.00	£0.00	£11,628.00
<b>1x energizer @ £300</b> <b>1x solar Panel @ £200</b>			1	0	0	0	1
Cost		£500.00	£500.00	£0.00	£0.00	£0.00	£500.00
<b>wooden pedestrian gate</b>	EWCO		0	10	0	5	15
Cost		£447.60	£0.00	£4,476.00	£0.00	£2,238.00	£6,714.00
<b>Total Cost per Field Parcel</b>			£36,947.60	£38,246.94	£16,746.74	£5,087.65	£97,028.93

# Plan for the future - create a maintenance plan

## Initial planting and establishment

- Choose the method that is right for you

## Future maintenance

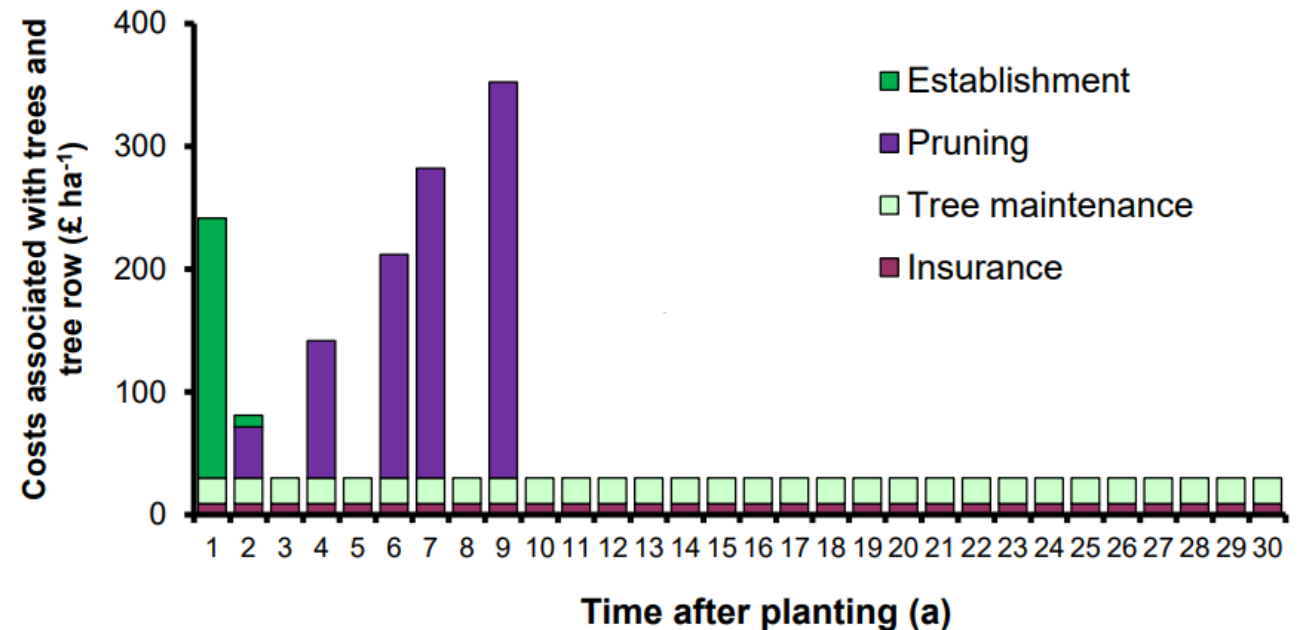
- Years 2-5
- Years 5-10
- Years >10

## Monitor survival

- Trees cannot be left alone – they need your help to survive



## Costs of tree management



Assumptions: the costs of establishing and maintaining a 156 tree ha<sup>-1</sup> silvoarable system with poplar; understorey management costs of the tree row were an additional £30-70 ha<sup>-1</sup> per year during cropping (from Burgess et al., 2003).



## Management plan

Growth stage or number of years from planting	Management activities
Planting year	<ul style="list-style-type: none"><li>• 2024 to 2025</li></ul>
Establishment	<ul style="list-style-type: none"><li>• Deer guard for Silver Birch (1.2m to 1.8m guards dependant on other species)</li><li>• Vole or rabbit guard for Willow</li><li>• Weed suppression around saplings (wood chip or mulch mats)</li></ul>
Up to 3 years	<ul style="list-style-type: none"><li>• Monitor and protect Silver Birch against animals and plants as necessary</li><li>• Willow should get to a height to be browsed from this point</li></ul>
4 to 8 years	<ul style="list-style-type: none"><li>• Formative pruning of Silver Birch side branches before they get thicker than 2.5cm, carried out in either June, September or October – maintain live canopy at about half the trees total height</li><li>• (Optional) Start coppice regime for Willow, cutting every third Willow in row each year for a 3-year cycle</li></ul>
8 to 35 years	<ul style="list-style-type: none"><li>• Continue pruning regime of Silver Birch, aiming for at least 4 to 6m of clean trunk</li><li>• Continue established coppice regime of Willow, focusing particularly on removing any competitive growth to the Silver Birch</li><li>• Remove dead Silver Birch and Willow where necessary with natural regeneration</li></ul>
Timber harvesting	<ul style="list-style-type: none"><li>• Harvest Silver Birch when average breast height diameter 25cm to 35cm (35 to 40 years old on good quality land or up to 65 years old on poor quality land)</li><li>• Harvested material needs to be removed from the site promptly as Birch can tend to deteriorate rapidly if left on the ground</li></ul>
Restocking	<ul style="list-style-type: none"><li>• Cut back all Willow before planting Silver Birch to avoid competition</li></ul>
Notes	<ul style="list-style-type: none"><li>• For any other relevant information</li></ul>

# Identify Impacts

Before you plant in-field agroforestry trees, you must check the sensitivity of the land you plan to plant on by using the [SFI Agroforestry data layer](#).

## Agricultural NE EIA:

You need a Natural England screening decision to:

increase the productivity by agroforestry of

- 2ha or more uncultivated land (15 years no ploughing/fertiliser or no proof)
- Any size semi-natural area (SSSI, Priority Habitat, NL, NP, HER)

restructure (fencing) rural land if boundaries are:

- 4km or over
- 2km or over in NL, NP, HER

## Afforestation FC EIA:

- 0-0.5ha = no EIA
- 0.5 – 2 ha = If trees can reach 5m and canopy cover >20% = EIA
- 0.5 – 2ha = spacing as per guidance = <20% canopy = No EIA
- >2ha = EIA



# Identify Funding

## Sustainable Farming Incentive (SFI) now:

- to support establishing woodland trees (£5.40) and fruit trees (£17.83)
- Currently only for an in-field agroforestry system (rows or grids)
  - AGF1 very low density £248 (30 to 50 trees per hectare)
  - AGF2 low density £385 (51 to 130 trees per hectare)
- as well as a species diversity supplement for planting 5 or more species (£1.16)

Currently, funding is only available for agroforestry on low sensitivity land

## Agroforestry Plan £1,268.08 to:

- Plan the system and work out ongoing management
- holistic view to fit with your landholding and local landscape
- outline business objectives and environmental benefits
- think about the range of agroforestry options to inform funding options
- provide a structured approach to gain any permissions

Not required for AGF1 & 2. Will be mandatory for others.

## Higher Tier to come in 12 months:

Action	Action Type	Duration	Annual Payment
Maintain high density in-field agroforestry	New (CS)	10 years	£849 per ha
Maintain medium density in-field agroforestry	New (CS)	10 years	£595 per ha
Maintain low density in-field agroforestry	New (SFI)	3 years	£385 per ha
Maintain low density in-field agroforestry	New (CS)	10 years	£385 per ha
Maintain very low density in-field agroforestry	New (SFI)	3 years	£248 per ha
Maintain very low density in-field agroforestry	New (CS)	10 years	£248 per ha

## Woodland Trust Trees for your farm

Plant 500+ trees to improve productivity and the environment on your farm.

Funding of up to 100% of costs is available for agroforestry schemes benefiting the business of productive farms, including a site visit and tree planting assessment.

[woodlandtrust.org.uk](http://woodlandtrust.org.uk)