

# Silvopasture is a sustainable option in grassland production systems

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# Objective: Sustainable Intensive Grassland Farming

## Problems:-

- Low biodiversity
- Homogeneous habitat
- Impoverished landscape
- Eutrophication
- Soil degradation
- Rural depopulation



# Proposal-

Silvopastoral agroforestry can make these intensive grassland landscapes more sustainable by-.

- Delivering a wide range of ecosystem services
- Aligning with a sustainable land management strategy



# What is Agroforestry?

Agroforestry is a collective name for land use practices where trees are combined with crops and/or animals on the same unit of land and where there are **significant ecological or economic interaction** between the tree and the agricultural components.

Silvopasture - where trees are grown in grazed pasture in a regular or varied pattern.





# Examples of Silvopastoral Systems

Grazing in forests following thinning and reseedling



Pigs in orchards

Parkland



Woodland eggs



# Poplar plantations for pulpwood-central Chile



1. Establishment-Cut grass for silage



2. Cut grass for hay



3. Graze

In Galicia-  
reduces fire risk





# Experimental trials at AFBI's field station in Loughgall, Co. Armagh.



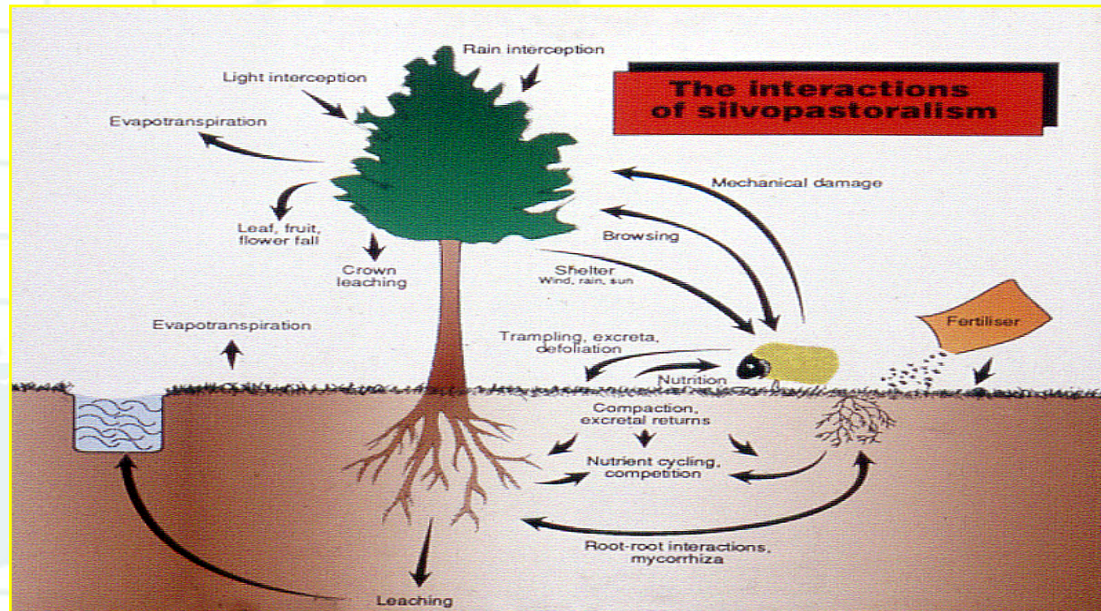
# Is silvopasture an opportunity to deliver a range of ecosystem services from this landscape?





# Research strategy

The strategy was to not to treat silvopastoralism as separate tree and grassland systems but as an integrated multifunctional land use option delivering a range of ecosystem services.



# Ecosystem Services

*Based on intimate interaction of trees, crop & stock*

- Root differentiation
- Soil zonal exploitation
- Earlier turn-out = extended grazing season
- Reduction in leaching losses
- Faster nutrient cycling
- Reduced soil erosion
- Increased biodiversity
- More carbon sequestered



# System sustainability

Economic

Social

Environmental

Institutional





# Silvopastoral systems are Economically sustainable

- Production targets can be flexible



Multifunctional outputs deliver real economic benefit



# Silvopastoral systems are Socially sustainable

- Multifunctional system - diversity of outputs and functions
- Employment opportunities
- More farmer involvement
- Contribution to cultural diversity
- More welfare- friendly environment for stock - seek shade and shelter

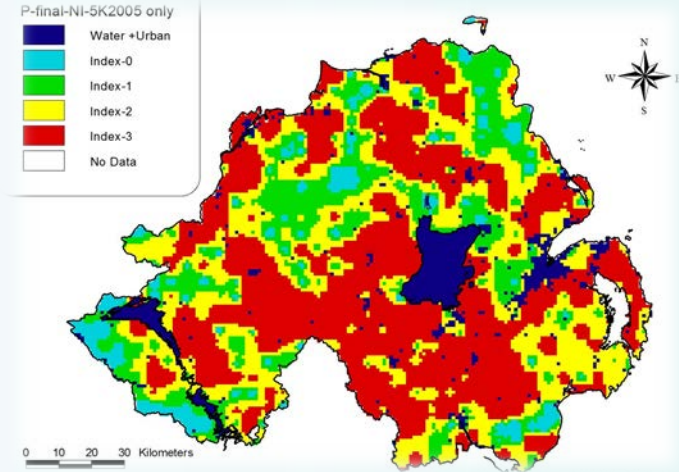
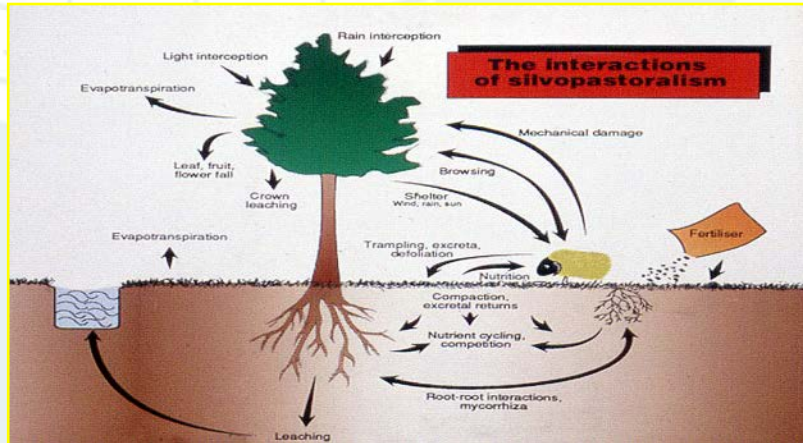


Landscape enhancement



# Silvopastoral systems are Environmentally sustainable

- Improved nutrient cycling
- Reduced nutrient leakage
- Carbon sequestration
- Biodiversity enhancement





# Carbon sequestration

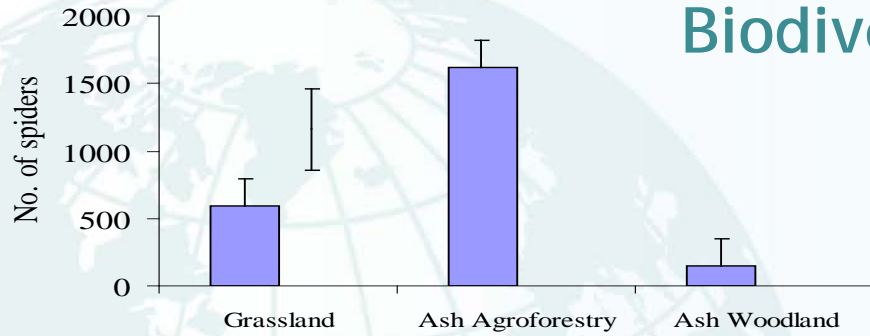
Net Annual C sequestration potential in different land use practices

Land Use Practice	Species	tC/ha/yr
Silvopasture (Canada) *	Poplar	2.8*
Pasture (Canada)	Perennial ryegrass	1.0
Forest Plantation (Ireland)	Sitka spruce (yc 18)	3.8

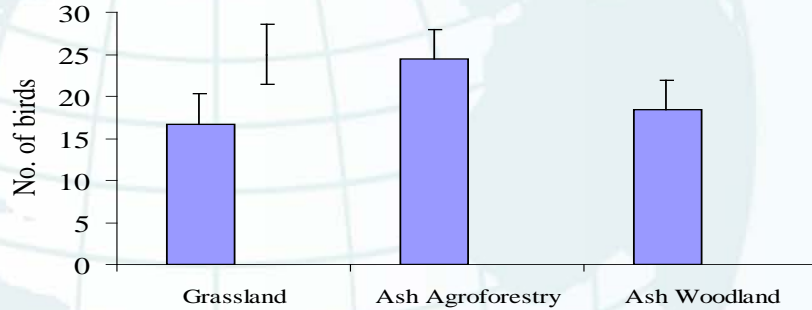
- This rate is equivalent to an immobilised rate of 9.9 t of atmospheric CO<sub>2</sub>/ha/yr
- Gordon et al (2007).



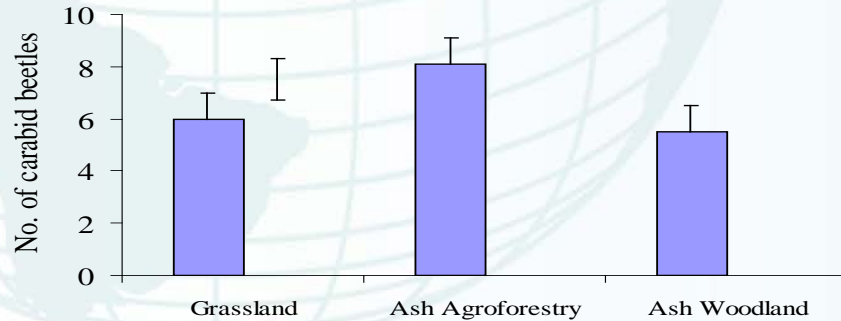
# Biodiversity benefits



*Spiders*



*Birds*



*Beetles*



# Institutional sustainability-policy support for agroforestry

In Ireland there is an option within **Forestry** support

In Northern Ireland scheduled to be included under **Farm** support

## Policy justification:-

Under Priority 4 - *Restoring, Preserving and Enhancing ecosystems related to agriculture and forestry,*

- Provides additional habitat.
- Manages overland flow of rainfall
- Reduces soil compaction and erosion
- Aids carbon sequestration by woodland





# AGFORWARD-EU FP7



AGroFOREstry practices that Will Advance Rural Development in Europe.

