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 reseeding

Parkland

Pigs in orchards

Woodland eggs
Poplar plantations for pulpwood-central Chile

- 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

<table>
<thead>
<tr>
<th>Land Use Practice</th>
<th>Species</th>
<th>tC/ha/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silvopasture (Canada) *</td>
<td>Poplar</td>
<td>2.8*</td>
</tr>
<tr>
<td>Pasture (Canada)</td>
<td>Perennial ryegrass</td>
<td>1.0</td>
</tr>
<tr>
<td>Forest Plantation (Ireland)</td>
<td>Sitka spruce (yc 18)</td>
<td>3.8</td>
</tr>
</tbody>
</table>

- This rate is equivalent to an immobilised rate of 9.9 t of atmospheric CO2/ha/yr
Biodiversity benefits

Spiders

Birds

Beetles
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.