Agroforestry in Europe
Practice, research and policy

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Agroforestry in Europe: Practice, Research and Policy

Content

1. The **practice** of agroforestry in Europe
2. Some **research** from the AGFORWARD project
3. Some important **policy** issues
The Practice of Agroforestry

Reclaimed arable land on the Vallevecchia farm in the Veneto region of Italy is flat, open, and exposed with few trees.
The Practice of Agroforestry

The landowner explained that they are practising agroforestry by planting tree rows on every third drainage ditch, e.g. every 90 m.
Integrating commercial production of organic oats with organic apples in Eastern England with 27 m alleys
Farming in the Pontben catchment in Wales
Sheep and wild cherry trees in Galicia
Montado and cattle in Portugal
Agroforestry:

the deliberate integration of woody vegetation with pasture (consumed by animals) or an agricultural crop

The woody species can be evenly or unevenly distributed or occur on the border of plots.
## Agroforestry types

<table>
<thead>
<tr>
<th>Silvopastoral</th>
<th>Silvoarable</th>
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<tbody>
<tr>
<td>Combining trees and shrubs with forage and animal production</td>
<td>Widely spaced trees and shrubs inter-cropped with annual or perennial crops</td>
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Extent of agroforestry in Europe

Area of agroforestry: Using LUCAS data: 15.4 Mha (3.6% of total area and 8.8% of agricultural area) (den Herder et al. 2017) (excludes 1.8 Mha of homegardens).
<table>
<thead>
<tr>
<th>Five agroforestry types</th>
<th>Silvopastoral</th>
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<th>Hedgerows, windbreaks and riparian buffer strips</th>
<th>Forest farming</th>
<th>Home-gardens</th>
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<td>Lines of trees/shrubs bordering farmland to protect livestock, crops, and/or soil and water quality</td>
<td>Forested areas used for harvest of speciality crops</td>
<td>Trees/shrubs with veg. in urban areas (1.8 Mha)</td>
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- **Silvopastoral**: Combining trees and shrubs with forage and animal production.
- **Silvoarable**: Widely spaced trees and shrubs inter-cropped with annual or perennial crops.
- **Hedgerows, windbreaks and riparian buffer strips**: Lines of trees/shrubs bordering farmland to protect livestock, crops, and/or soil and water quality.
- **Forest farming**: Forested areas used for harvest of speciality crops.
- **Home-gardens**: Trees/shrubs with veg. in urban areas (1.8 Mha).
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www.agforward.eu describes the outputs

Context
Farmer networks

Evaluate Impact
Policy

AGFORWARD has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no 613520

AGFORWARD: AGroFORestry that Will Advance Rural Development

Enter

Select your language
Ten Farmer networks: high nature and cultural value agroforestry

Use of GPS and adapted forest management with reindeer in Sweden

Effect of tree density on livestock carrying capacity in Iberian wood pastures
Ten farmer networks: agroforestry for tree systems like walnut and apples

Beneath walnut trees in Spain, grazing with sheep (relative to mowing) and intercropping legumes (relative to unfertilised grass) increased carbon storage and tree diameter growth.

Sheep in cider apple orchards in the UK and France can reduce mowing costs.
Eleven farmer networks: agroforestry for arable systems

Benefits of fescues & legumes, wild flowers and mulches in tree rows

Shelter benefits on crop yields in Germany
Nine farmer networks: agroforestry for livestock systems

- Establishment of a tree fodder database describing its nutrients for livestock
- Crude protein can reach 220 g/kg in black locust, chestnut, white mulberry, and ash. White mulberry and ash, which also have high digestibility, could be included in cattle diets (Emile et al. 2017)

Tree fodder with dairy cows in France
Nine farmer networks: agroforestry for livestock systems

Tree cover makes chickens use their range area more evenly, with more even distribution of mature. Less feather pecking damage is seen. Less waterfowl are seen in the free-range area which can be a risk for transmitting avian flu.
Farmer’s opinions of the **positives** and **negatives**

Positive and negative perceptions of agroforestry (Garcia de Jalon et al. 2017) based on 30 stakeholder groups (comprising 344 stakeholders) on the positive (green bars on the left, bottom axis) and negative issues (red bars on the right, top axis) related to selected agroforestry systems across Europe.
Modelling the impact of landscape agroforestry in twelve European regions

Twelve case study regions in Europe:
- Atlantic (3)
- Mediterranean (4)
- Continental (4)
- Boreal (19)

- Landscape Test Sites (LTS), 8-12 x 1 km²
  - Habitat mapping
  - Modelling biophysical benefits

- Social catchment, 50–200 km², 5–6 municipalities
  - Public Participation Geographic Information System (PPGIS)
  - Deriving socio-cultural benefits

Kay et al. (2017) Agroforestry Systems
Does European agroforestry provide biodiversity and biophysical benefits?

Modelled Ecosystem Services

- Biomass yield
- Groundwater recharge rate
- Nutrient retention
- Soil preservation
- Carbon sequestration
- Biodiversity
  - Functional biodiversity (Pollination)
  - Habitat diversity
Yes! - Agroforestry enhances biodiversity and biophysical ecosystem services

Agroforestry dominated landscapes
- better nutrient retention
- higher carbon sequestration
- higher soil preservation
- higher pollination services
- higher proportions of semi-natural habitats

Agricultural dominated landscapes
- higher annual crop biomass yields
- higher groundwater recharge rates
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Review of current policy and recommendations to support uptake

Mosquera-Losada et al. (2016 and 2017)
Designating between agroforestry on agricultural land and on forest land

<table>
<thead>
<tr>
<th>Agroforestry on agricultural land</th>
<th>Agroforestry on forest land</th>
<th>Urban areas</th>
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<tr>
<td>Silvopasture</td>
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<td>Hedgerows, windbreaks and riparian buffer strips</td>
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<td>Silvoarable</td>
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<tr>
<td>Wood pasture</td>
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<td></td>
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<tr>
<td>Meadow orchards</td>
<td>Forest grazing</td>
<td></td>
</tr>
<tr>
<td>Grazed orchards</td>
<td>Forest grazing</td>
<td></td>
</tr>
<tr>
<td>Alley cropping</td>
<td>Forest grazing</td>
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<tr>
<td>(Mosquera-Losada et al. 2017)</td>
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Farmers want to ensure that maintain Pillar I payments in the Common Agricultural Policy

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<th>CAP</th>
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<th>Forest land</th>
<th>Urban area</th>
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<tr>
<td>Pillar I – direct payments</td>
<td>Payments for farmers who maintain land in good agricultural and environmental condition</td>
<td>No payment</td>
<td>No payment</td>
</tr>
<tr>
<td>Pillar II – Rural Development</td>
<td>Up to 27 measures that can support agroforestry including one “agroforestry” measure</td>
<td></td>
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Some summaries of policy recommendations

Recommendation 5
In Pillar I, because of the environmental and societal benefits of trees on farms, agroforestry on arable and pasture land should be fully eligible for direct payments
Some summaries of policy recommendations

9. **In Pillar II**, the current 27 measures linked to agroforestry should be grouped together in one place.

11. Given the increasing risk of forest fires, there should be support for silvopasture (forest grazing), within the agroforestry measure.

12. Result-based payments can be delivered if agroforestry is implemented at a farm-scale.
Summary: Agroforestry in Europe: Practice, Research and Policy

1. The practice of agroforestry in Europe is more important than you think
2. Farmers recognise the animal welfare, soil conservation, carbon, and biodiversity benefits, and administration as a constraint
3. There are policies that can be implemented to support joined-up effective land-use use
References


References


