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The potential for agroforestry on farms

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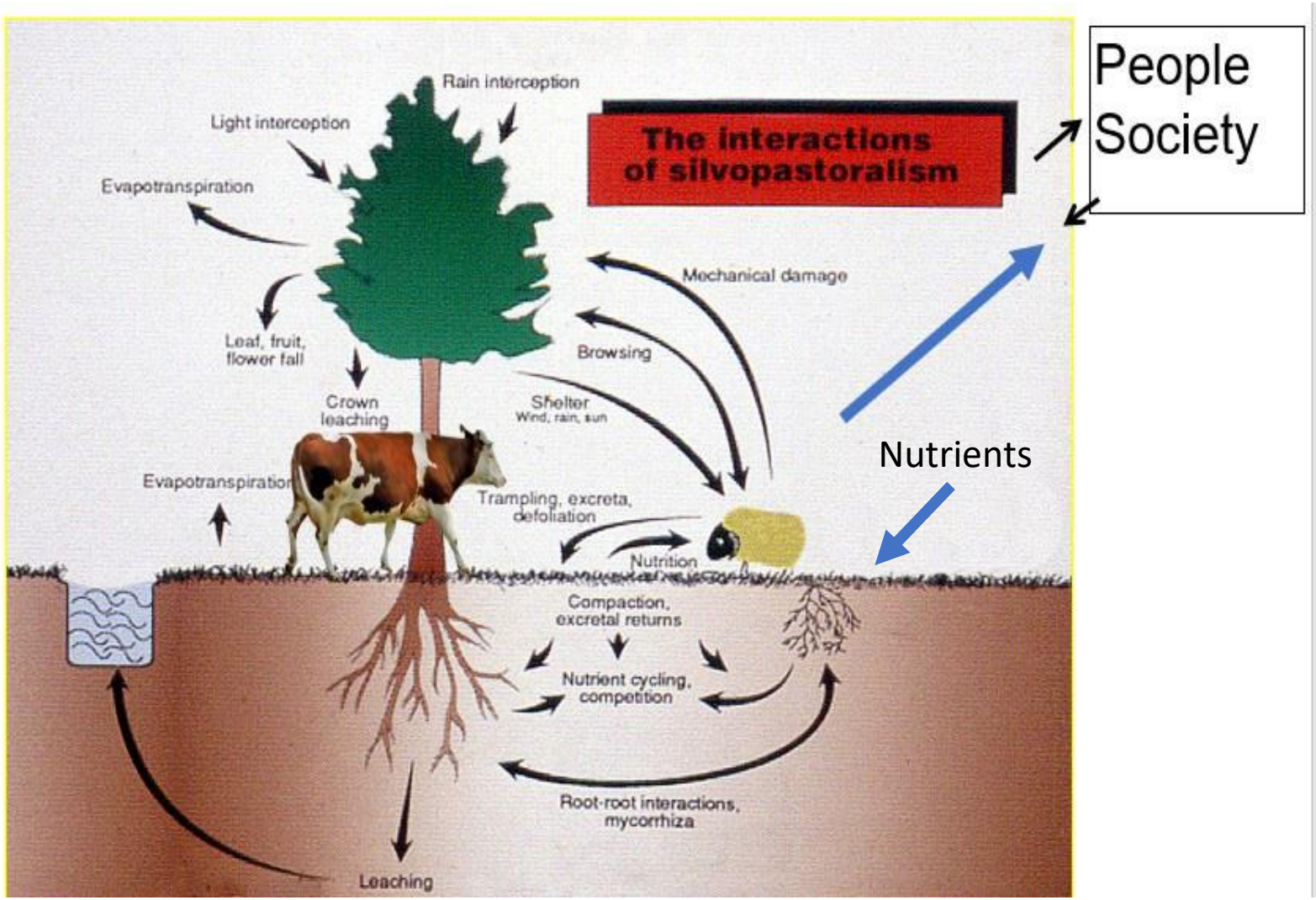
Grow IN
Farming as a force for change

Incorporating trees into farming systems

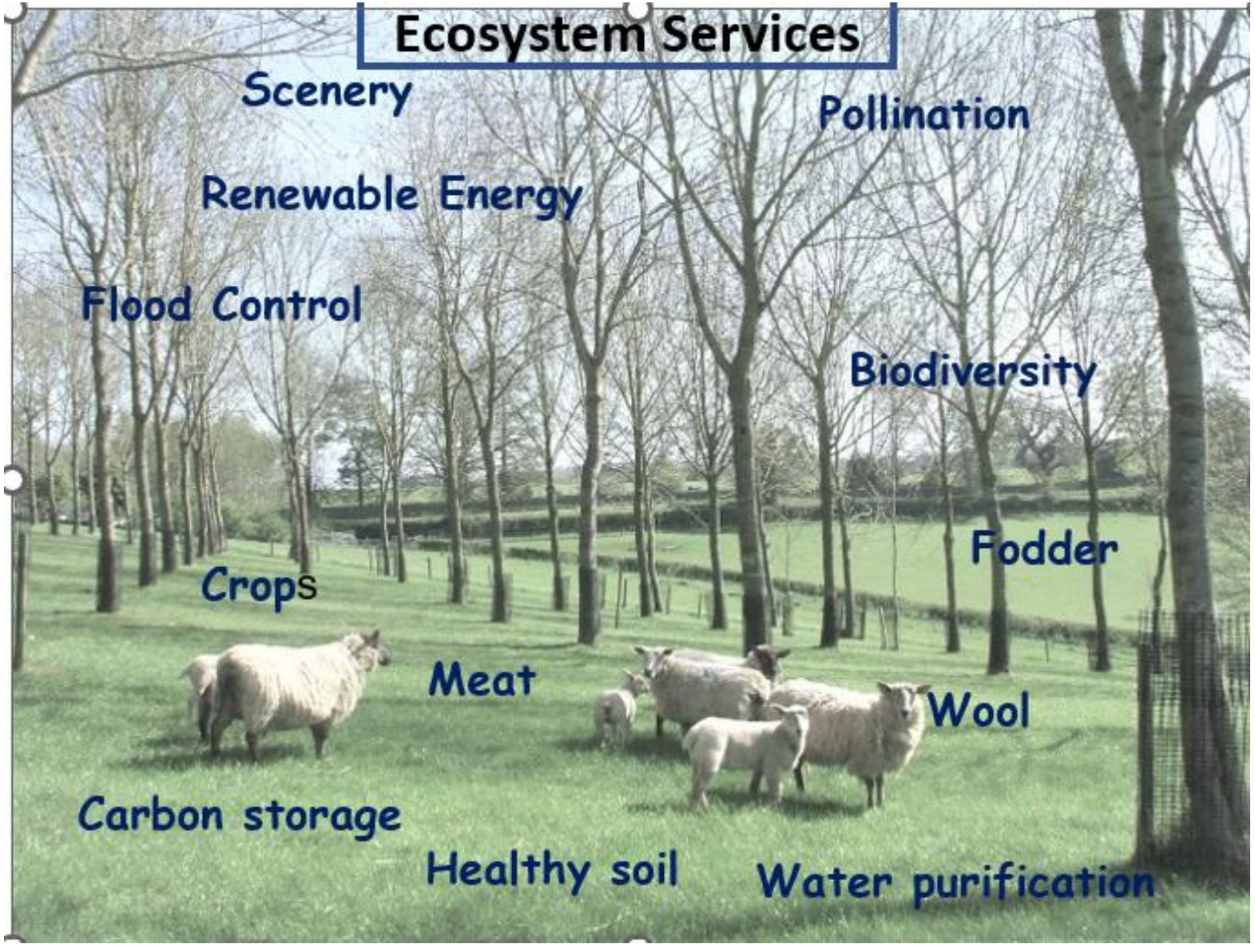
- Trees can be integrated into productive farming systems in a range of innovative ways to bring benefits – eg **hedgerows**, **shelterbelts,** orchards …
- In **silvopastoral or tree-pasture systems**, trees are mixed with animals on the same unit of land and can deliver production and performance benefits and a range of ecosystem services resulting from significant ecological, environmental and economic interactions between the components.
- They are land use systems which are environmentally, economically and socially sustainable, and which have the potential to create resilience to climate change impacts.

Silvopasture

An integrated multifunctional land use option delivering a range of ecosystem services.



The ecological interactions within silvopasture can deliver a wide range of ecosystem services



The evidence base -

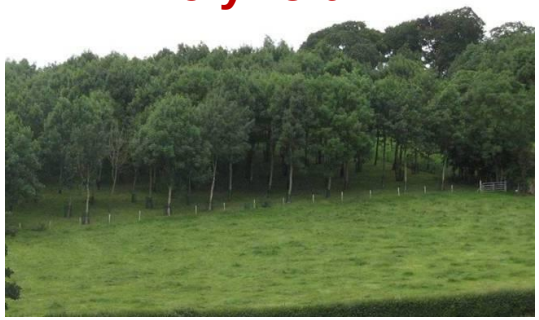
In Northern Ireland, in 1989 as part of a UK - wide National Network Experiment, considerable investment went into establishing a replicated trial comparing **grassland**, **silvopastoral** and **woodland** systems

Silvopasture-stages from establishment

Main cost is planting. Maintenance is minimal. Pruning. Recommend rotational grazing.

Sheep carrying capacity was not reduced in the silvopasture until trees were 12 years old (c. 8m ht & 15cm diam) and subsequently recovered after tree thinning.

19 yr old



Individual Sheep performance was unaffected by the tree presence. From the evidence of animals seeking shade and shelter individual animal performance benefits and resilience to climate extremes can be inferred.

Animal Welfare

In silvopasture:

- Animals have a more varied diet, tree fodder, suits Multi Species Swards, - healthier
- Extension of grazing season - animals have reduced incidence of respiratory diseases.
- Variation in habitat structure. Reduces boredom?
- Stock seek out shade and shelter

… Significant Marketing Opportunity

Biodiversity and Soil health

- We had more spiders, birds, beetles, pollinators and earthworms in the silvopasture than grassland or woodland
- Agroforestry brings huge benefits to soil health
  1. *Organic matter - carbon in particulate matter,*
  2. *Mycorrhizal fungi*
- The understorey component can be a multi-species sward with legumes and deep rooting plants

- Soil physical structure - improved porosity,

Healthy soils are more climate - resilient

Wider implications of ecosystem services delivered for more sustainable livestock production

- Soil zonal exploitation by roots = greater water infiltration and reduced run - off for flood mitigation,
- **extended grazing season** (and inferred reduced ammonia emissions) = earlier turn-out and later housing of livestock **14-17 Weeks**
- Carbon sequestration was estimated at 2.4t/c/ha/yr. (Olave et al 2016).
- Novel sources of on and off- farm income

Summary of farm climate performance

Our farm is **119 ha** with **25.3 km** of hedges storing **273.3 tC/ha** (**measured**) and sequestering **359.4 tC/ yr** (**calculated**-all from PhD study, 2020)

Add this to (**measured**) **0.8 tC/ha/yr** sequestered by the pasture, our farm sequesters **455 tC/yr – 3.82 tC/ha/yr**-*the mean emissions from beef production in Ireland is* ***4 tC/ha/yr***

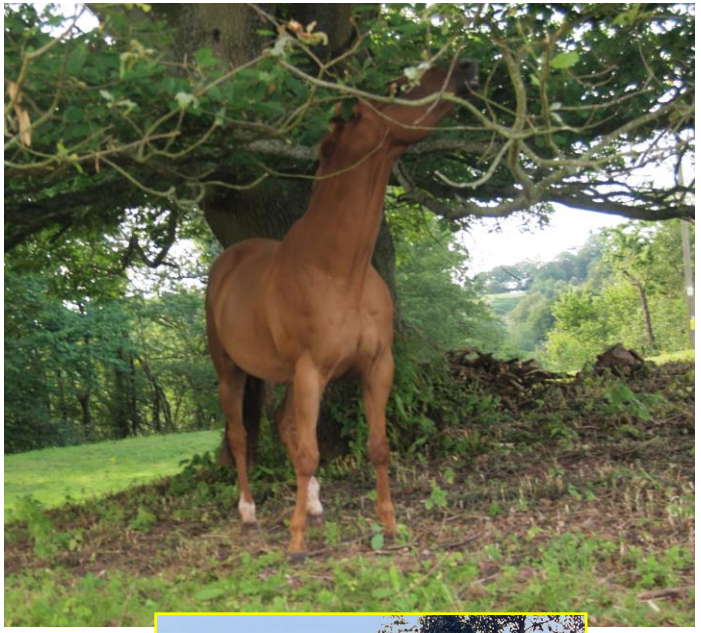
we also have silvopasture storing **77 tC/ha** and SEQUESTERING **3.4 tC/ha/yr (measured)**

if we incorporated 20% silvopasture on the farm we would be sequestering an additional **81 tC/yr** ie whole farm performance of **4.5 tC/ha/yr (extrapolation)**

This is the equivalent to forestry production-yet we have all the ecosystem services delivered by the agroforestry

These are all based on hard data - A CLIMATE WIN-WIN !

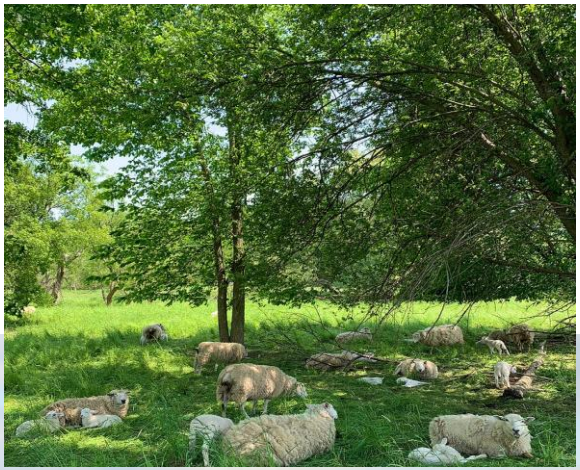
Tree fodder



There is evidence that eating twigs and leaves from trees can reduce methane emissions from ruminants

Examples of agroforestry systems

Trees can be incorporated into farms in a range of scenarios – without significantly reducing output



Support for silvopasture

Hugely diverse range of ways to encourage tree planting on productive farms (outside of conventional farm forestry or woodland planting):

Agroforestry is supported as a FORESTRY MEASURE where it is offered as a tree-based farming production system with the potential to deliver high quality timber.

We need flexibility in the system …..

Needs to be encouraged and supported as a more sustainable climate resilient farming system which encourages the wider planting of trees on productive farms-ie an AGRICULTURAL and/or ENVIRONMENTAL support measure.

Teagasc are currently investigating options to convert a dying ash plantation to silvopasture

- Aims:

a. To maintain, where practicable, ash that is showing signs of resistance/tolerance to ash dieback;

b. To create a multi-species and multi-structured silvopasture system, through planting and incorporating natural regeneration of tree/shrub species;

c. To facilitate sustainable agricultural production on the site;

d. To demonstrate potential options for silvopasture.

Support and promotion----

www.irishagroforestry.ie

- **Act as a coordinated voice- very dispersed interest**
- **Educate**
- **Disseminate research**
- **Train practitioners**
- **Advise policy**
- **Promote on farms**

to support networking and innovation in farm businesses

THANK YOU.

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