SILVOPASTORAL AGROFORESTRY SYSTEMS

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MODULE 7

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AGFOSY

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AIM OF THE MODULE

- Help livestock farmers ascertain a firm understanding of the silvopastoralism practice. The incorporation of trees and livestock is an ancient farming method, which has now been developed into a well functioning and multi beneficial modern livestock rearing practice
- Gain a thorough knowledge and understanding of how silvopastoralism can be incorporated in modern farm holdings and the economic, environmental and practical benefits it can offer

DEFINITION AND HISTORICAL CONTEXT OF SILVOPASTORAL AGROFORESTRY

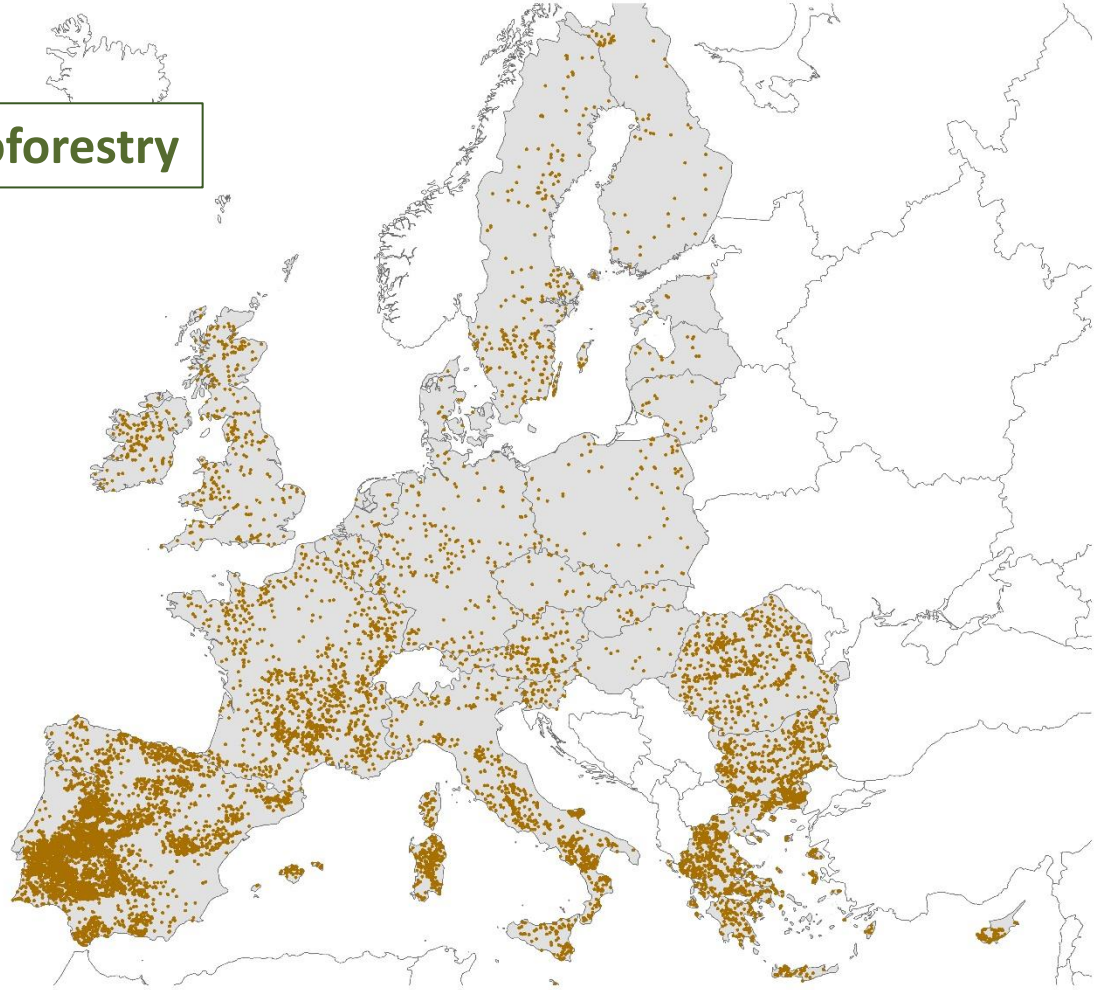
- Silvopastoralism is a multi-product-system which involves the integration of trees, shrubs and livestock
- It had been prominent in Europe up until the 20th century
- Fruit and Nut trees amongst livestock in particular were popular in more recent times due to the additional produce the system would provide
- Silvopastoralism had once been a more conventional land management practice in Europe. The system offered natural benefits which have now been artificially replaced
- Wood pasture would involve the rearing of livestock in open woodland where the animals had natural shelter under the trees and could forage for various food in the undergrowth

CURRENT SITUATION OF SILVOPASTORALISM IN EUROPE

The extent of Agroforestry in Europe is 19.5 million hectares. Silvopastoralism makes up 85 % of that number, making it the most common form of Agroforestry today. It is most often associated with Southern European countries, where trees offer vital shade for livestock. Silvopastoralism in Europe takes up 10 % of the overall permanent grasslands.

CURRENT SITUATION OF SILVOPASTORALISM IN EUROPE

Livestock agroforestry



Source : Agforward Project

DIFFERENT TYPES OF SILVOPASTORAL AGROFORESTRY

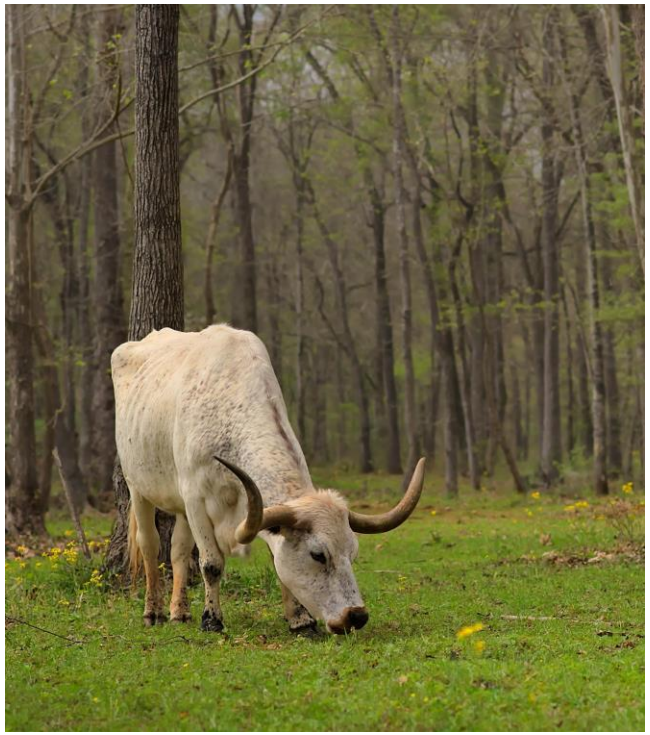
The basic difference in silvopastoral agroforestry is which way round the integrated factor is introduced into the established land use. Either trees could be introduced to a pasture or livestock could be introduced to open woodland.

DIFFERENT TYPES OF SILVOPASTORAL AGROFORESTRY

Trees within livestock pasture could either be in the form of boundary tree systems or regularly spaced systems. Boundary tree systems would involve hedges and trees on the boundary of the grazed land. Regularly spaced systems are most often associated with fruit and nut tree integration within grazed land. Grazed orchards in spaced rows is a popular multi-product-system. A typical advantage of this system is that it is more practical for modern machinery.

DIFFERENT TYPES OF SILVOPASTORAL AGROFORESTRY

Livestock within woodland systems are well suited to most livestock, with pannage (pasture for pigs) and silvopoultry systems being two of the most common today. This has many advantages including a more varied diet for livestock.



IMPORTANCE OF SILVOPASTORAL AGROFORESTRY

- Agroforestry addresses the negative effects of intensive agriculture
- Silvopastoralism is the most common form of agroforestry making up 85 % of all agroforestry in Europe
- Whilst intensive farming in this context is most often associated with arable farming, there is growing demand for sustainably and locally produced meat and dairy which would require more land to be put aside for livestock grazing
- Intensive livestock rearing in high stocking densities has negative welfare effects, meanwhile imported meat products often come at a devastating environmental cost
- Should pasture grazing livestock numbers increase the problem would be the lack of flora diversity in pastoral land
- Silvopastoralism would aid in addressing this as well as providing a healthier environment for livestock

FUNCTION OF SILVOPASTORAL AGROFORESTRY

- Silvopastoralism functions as a low cost agroecological solution with economic benefits.
- In a livestock grazing setting, the shelter the trees provide for livestock helps to increase productivity by relieving heat stress and subsequently making ruminants more efficient
- A farm is generally made more resilient from silvopastoralism by reducing soil loss and acting as a buffer against extreme weather

FUNCTION OF SILVOPASTORAL AGROFORESTRY

- Adoption of silvopasture is often undertaken as a diversification strategy, to be a second crop or means of production for timber, firewood, fruit or biomass. The agroecological and economic functions of silvopastoralism will naturally coincide with one another, but if managed in a certain way, their relative importance will vary depending on the desired impact of integrated trees and the management approach in achieving the desired outcome.
- Additional livestock feed as they browse the leaves

BENEFITS OF SILVOPASTORAL AGROFORESTRY

- Earn more: Synergies between cattle and trees mean that a combined system can produce more income than either system on its own. Comfortable cows lead to more and higher quality beef and milk
- For small landowners especially, Agroforestry helps to maximise production
- Environmental benefits: Fight climate change, when planted on degraded pasture land, trees sequester significant amounts of carbon dioxide. Silvopastoral systems can provide watershed and biodiversity benefits as well
- Public goods: water, soil and air can all be improved through tree planting. Tree's play an important role on the water table. They help by reducing flow and, consequently, mitigating against flooding
- Tree roots break up subsoils and increase the organic matter held in soils

BENEFITS OF SILVOPASTORAL AGROFORESTRY

- Trees can provide browsing for livestock. Tree forage tends to have higher micronutrients and tannins than grasses, which benefit health and can reduce parasite burdens. Trees will also continue to supply food in very hot dry conditions when grass stops growing. In very wet conditions, using trees to dry out areas of high-risk land can help reduce incidence of diseases like foot rot and fluke
- Positive human and livestock interaction increases when animals are surrounded by trees

ANIMAL – TREE INTERACTION AND INFLUENCE OF SILVOPASTORAL AGROFORESTRY ON THE ENVIRONMENT

In pastoral land, trees provide ecological services which **benefit the livestock** and overall performance of the land.

- Heat stress has a significant negative impact on livestock. It can lower milk production and decrease breeding efficiency. It lowers the conception rate in Euws and decreases fertility in Rams. Generally livestock eat less and therefore produce less when they are overheated. Trees provide a cheap and effective solution to this problem
- As well as offering shade, trees offer shelter from other conditions such as wind exposure and torrential rain. Both of which affect the welfare and health of livestock. The cost of integrating trees in pastoral land would include slightly less grass under and around the tree

ANIMAL – TREE INTERACTION AND INFLUENCE OF SILVOPASTORAL AGROFORESTRY ON THE ENVIRONMENT

In pastoral land, trees provide ecological services which benefit the livestock and overall **performance of the land.**

- Trees also provide soil health advantages such as capturing and recycling nutrients. They improve the soils holding capacity of nutrients and water which helps to maintain long term soil fertility of pastures.
- They are generally associated with soil biodiversity and contribute to healthy and functioning soil.

SUMMARY OF THE MODULE

LESSON LEARNED

- Being a common form of agroforestry, **silvopastoralism** is well established as a **livestock rearing land practice**
- It's forerunner was the natural forestry ecosystem and so it is a practice based on nature with modifications of **modern practicalities** considered
- What this means is that it reaches an effective compromise of being a **healthy** and **sustainable system** for our natural systems whilst being **economically** and **practically** viable as a farming system