

TRADITIONAL AGROFORESTRY SYSTEMS AND SYSTEMS WITH A HIGH NATURAL OR CULTURAL VALUE

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MODULE 5



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AIM OF THE MODULE



- Traditional agroforestry systems as a legacy of ancestral practices
- The main traditional agroforestry systems and their functions
- Added value of traditional agroforestry systems
- Ecosystem and cultural services



TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



TRADITIONAL AGROFORESTRY SYSTEMS ARE BASED ON:

**Fruit of man-
nature
interaction**



- ✓ **ANCESTRAL AND TRADITIONAL KNOWLEDGE**; knowledge adapted to the environmental, social and economic conditions of the territory
- ✓ **SOCIAL INNOVATIONS**, cooperation and collaboration
- ✓ **MATERIAL AND IMMATERIAL CULTURAL HERITAGE**: knowledge about resources, knowledge, adapted infrastructures (terraces, ditches, etc.), varieties, races, soils, environmental conditions, etc.
- ✓ **CULTURAL AND TERRITORIAL IDENTITY** and the sense of belonging and conservation of the territory
- ✓ Conservation of the **LANDSCAPE MEMORY** (uses, meaning, contents, resources, etc.)



TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



SOME DATA ON AGROFORESTRY SYSTEMS IN EUROPE:

The total area of agroforestry practices in the EU-27 is estimated at 15.4 million hectares, equivalent to 3.6% of the land area or 8.8% of the utilised agricultural area. (Herder et al., 2017).
Environmental, social and economic aspects of the territory.





TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



MAIN TRADITIONAL AGROFORESTRY SYSTEMS IN EUROPE

FIRST LEVEL: classification based on components

1. SILVOARABLE - trees with crops (agricultural farming). Combination of shrub legumes and forest trees, distributed in spaced rows within pastures. They are also a source of food for livestock.

2. SILVOPASTORAL - trees with pastures and cattle. This is a way of combining trees with pasture and animals within a plot. A silvopastoral system allows:

- To better conserve the soil
- Greater yield and duration of the pastures
- More balanced nutritional food for the animals
- Shade for the livestock with tree planning
- Long-term wood production

Silvopastoral systems are the most widespread European agroforestry systems, representing 15.1 million hectares.





TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



1.1. SILVOARABLE AGROFORESTRY SYSTEM, PASTURELAND-CEREALS:



Silvoarable agroforestry, pastureland and cereal cultivation in ecological regime

A particularly attractive agroforestry system at present is that of cereal trees, a system that extends from northern Italy to the rest of Europe (Eichhorn et al., 2006), in which production can be increased by up to 30 % compared to separate crops (Dupraz et al., 2004).



TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



1.2. AGROFORESTRY SYSTEMS WITH HIGH NATURAL AND CULTURAL VALUE:



Organic dry farming olive grove, in which a crop of aloe vera, *Barbadensis miller* variety, has been associated among the olive grove lines. Therefore, the space available between the tree strata is used for the cultivation of succulent plants of low bearing.



TRADITIONAL AGROFORESTRY SYSTEMS AS A LEGACY OF ANCESTRAL PRACTICES



2. TRADITIONAL AGROFORESTRY SYSTEMS IN PASTURELAND



In the image a **pastureland**, where **wild bulls graze**. The pastureland is one of the most representative agroforestry-silvopastoral systems in Spain with an estimated area of 3.5 million hectares. Located mainly in the southwest of the Iberian Peninsula.



THE MAIN TRADITIONAL AGROFORESTRY SYSTEMS AND THEIR FUNCTIONS



MAIN TRADITIONAL AGROFORESTRY SYSTEMS IN EUROPE:

FIRST LEVEL: classification based on components

3. **AGROSILVOPASTORAL** - trees with crops and livestock.
4. **PREDOMINANT TREES** - forestry with other subordinate components, forest agriculture. Complementary use of the forest is made, e.g. production of mushrooms, small fruits, medicinal plants, culinary plants.
5. **PRESENT SPECIAL COMPONENTS** - trees with insects and fish.





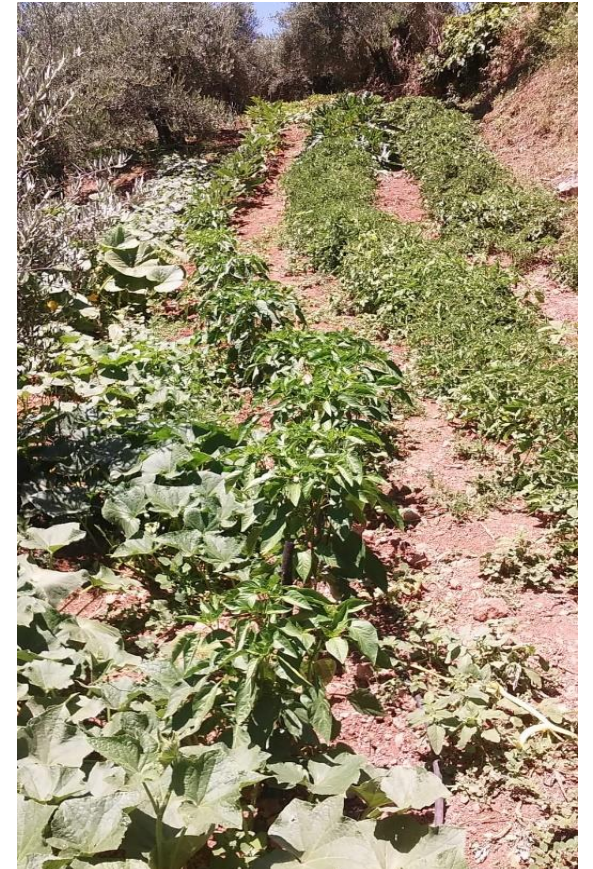
THE MAIN TRADITIONAL AGROFORESTRY SYSTEMS AND THEIR FUNCTIONS



MAIN TRADITIONAL AGROFORESTRY SYSTEMS IN EUROPE:

SECOND LEVEL: Arrangement of components in space and time

1. **ROTATIONAL SYSTEM** - association between trees and crops (or grasses).
2. **SPACE SYSTEM** - association of trees and crops together in the same land management unit.
3. **MIXED** - trees distributed over more or less the entire land area.
4. **ZONED** - trees planted in systematic arrangements (rows) or in some element of the farm (field boundaries).





THE MAIN TRADITIONAL AGROFORESTRY SYSTEMS AND THEIR FUNCTIONS



MAIN FUNCTIONS OF TRADITIONAL AGROFORESTRY SYSTEMS:

Agroforestry systems stand out for their multifunctionality, environmental, cultural, productive, social and economic. They provide the following ecosystem services:

PRODUCTION SERVICES: such as wood, food for humans such as fruit and food for animals such as grass and fodder.

SOCIAL - CULTURAL SERVICES: maintenance of traditions, customs and popular knowledge linked to the production system and elements of it. The traditional agroforestry practices promote the traditions and cultural habits, recover the food and the varieties of the local patrimony and maintain the popular knowledge linked to the production system and its elements. It also contributes to improving the health and well-being of rural and urban communities.



Organic sheep grazing



THE MAIN TRADITIONAL AGROFORESTRY SYSTEMS AND THEIR FUNCTIONS



MAIN FUNCTIONS OF TRADITIONAL AGROFORESTRY SYSTEMS:

Agroforestry systems stand out for their **multifunctionality, environmental, cultural, productive, social and economic**. They provide the following ecosystem services:

ECONOMIC SERVICES: increase yields and provide additional income streams, thus increasing profits for farmers and landowners due to additional sales of crops and secondary commodities. Intermediate income can be expected if fruit species have been planted, as well as through the production of firewood, baskets, etc.



Example of income diversification by crop association in an AF System of olive groves and Aloe Vera



ADDED VALUE OF TRADITIONAL AGROFORESTRY SYSTEMS



1. To preserve and protect the TANGIBLE HERITAGE such as:

A) **TRADITIONAL SEEDS AND VARIETIES**, as well as **AUTOCHAN CATTLE RACES**.

B) **ANCESTRAL CULTURAL AND MANAGEMENT SYSTEMS** such as the pastureland where thanks to this the wild bull or the Iberian pig native breeds survive.



Variety of traditional fig Family Garden



Iberian pig, native breed of the Iberian Peninsula



ADDED VALUE OF TRADITIONAL AGROFORESTRY SYSTEMS



TRADITIONAL AGROFORESTRY SYSTEMS PROVIDE THE ADDED VALUE OF:

1. To preserve and protect the **TANGIBLE HERITAGE** such as:

C) Historical **HYDRAULIC AND WATERING SYSTEMS** such as ditches and cisterns.

D) **FARMHOUSES, ORCHARDS, BARNs, FENCES, TERRACES.**

E) **LANDSCAPES** such as holm oak pasture, olive groves, riparian forests, coniferous forests, etc.

F) **WILD FLORA AND FAUNA** associated with agroforestry systems.



Overview of a traditional agricultural landscape in the region Hriňová (Central Slovakia). Photo by Vladimír Čaboun.



ADDED VALUE OF TRADITIONAL AGROFORESTRY SYSTEMS



TRADITIONAL AGROFORESTRY SYSTEMS PROVIDE THE ADDED VALUE OF:

2. Preserve and protect the **IMMATERIAL HERITAGE** such as:

- A) **TRADITIONS, COSTUMES and POPULAR KNOWLEDGE** linked to the system of production, consumption and commercialization of agro-forestry products.
- B) **SONGS, POPULAR SAYS, RITUALS AND FESTIVAL ACTS** linked to the work in the agrosystems.
- C) **TO CUSTODIATE THE TERRITORY** for future generations.



In June the cherry festival is celebrated in the town of Castillo de Locubin, Jaén, Spain. In honor of the star crop of the territory with which many gastronomic recipes, liqueurs and preserves are made.



ADDED VALUE OF TRADITIONAL AGROFORESTRY SYSTEMS



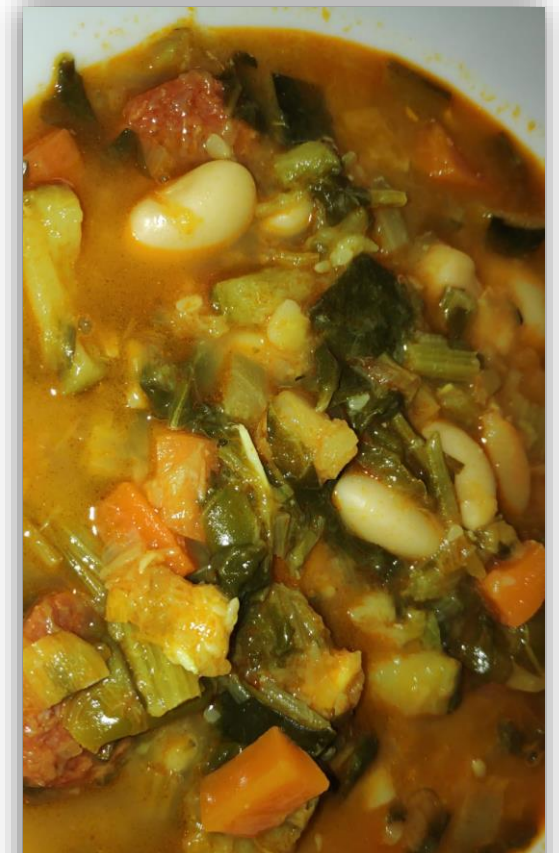
TRADITIONAL AGROFORESTRY SYSTEMS PROVIDE THE ADDED VALUE OF:

2. Preserve and protect the IMMATERIAL HERITAGE such as:

D) Provide opportunities for **SUSTAINABLE DEVELOPMENT** to the inhabitants of the territory in the form of food, jobs, goods and ecosystem services.

E) **TRADITIONAL CRAFTS AND PROFESSIONS** linked to the agricultural, livestock and agri-food system such as wicker or esparto grass.

F) **GASTRONOMY** linked to agroforestry systems.



Traditional stew with vegetables from the garden such as chard and sausage from the slaughter



ECOSYSTEM AND CULTURAL SERVICES



THE ECOSYSTEM AND CULTURAL SERVICES OF AGROFORESTRY SYSTEMS:

Agroforestry systems stand out for their **multifunctionality, environmental, cultural, productive, social and economic**. They provide the following ecosystem services:



REGULATION SERVICES:

- **Increase resilience to climate change;** this improved response to climate change is based on their ability to conserve and maintain accumulated C, increase sequestered C, provide substitute fossil fuels. This greater capacity to adapt to climate change is based above all on increasing and improving biodiversity and use in comparison with other simpler forms of land management such as agricultural monocultures.



Naturalized water raft in agroforestry system of Aloe Vera, herbs and olive grove

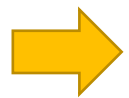


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Agroforestry systems stand out for their **multifunctionality, environmental, cultural, productive, social and economic**. They provide the following ecosystem services:



REGULATION SERVICES:

- **They contribute to maintaining soil fertility** and/or reducing erosion, increasing soil organic matter, nitrogen fixation and nutrient recycling.
- They promote **water conservation** both in quantity and quality.
- **They capture carbon, and help conserve biological diversity** in fragmented landscapes.



Placement of a nest box in a pastureland to conserve biological diversity



SUMMARY OF THE MODULE



LESSON LEARNED

- Agroforestry systems are currently maintained by the **interaction of man and nature**
- There are different types of agroforestry systems but they all lead to the **connection of agriculture with nature** in its different forms
- They are distinguished by the presentation of diverse **ecosystem services**
- It enjoys an added value such as **traditional products** or the possibility of entrepreneurial development
- These systems increase the capacity of the environment to **absorb disturbances** while maintaining its structure