

WORLD AGROFORESTRY IN PRACTICE

AGROFORESTRY & TRANSUMANCE IN SARDINIA

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LOCATION Europe, Italy (Sardinia)

ORGANISATION CNR ISPAAM and ISPA

TYPE OF PRACTICES Sylvopastoralism

PRODUCTION Milk, meat, wool, wood, fruits

1 GENERAL CONTEXT

In Sardinia, livestock production is the main agricultural activity (70% of total annual added value). Wooded pastures represent the most important source of livestock fodder in extensive farming systems. Meantime, it owns a remarkable role in biodiversity conservation, and upkeep of heritage as integral part of the countryside culture. The Marghine region is a representative example for central Sardinia, where summer grazing on highland wooded pastures is an ancient practice performed with short distance transhumance from nearby lowlands, dominated by neglected wild pear trees.



Cattle transhumance going through the village

Turn neglected unproductive agroforestry components into food/fodder according to historic know-hows



2 ENVIRONMENTAL CHARACTERISTICS

The Marghine has a plain-to-slope morphology with altitudes from 200 to 1200m. Lowlands soils are alluvial deposits whereas highlands are dominated by acid effusive rocks and basalts. According to altitude, the average yearly temperature and rainfall ranges from 12 to 15 °C and 1100 to 600 mm, respectively.

3 DESCRIPTION AND INTEREST

Transhumance, forced by the need to assure food and fodder all the year around, has steered the co-evolution of plants, herds and mankind in this region producing some peculiarities that created a unique landscape.

Marghine landscape is a mix of trees, shrubs and open pasture spaces, where ecosystems change according to altitude, soil type and rainfall amount. Pastoral activities, dating back to the Nuragic prehistoric and proto-historic time (3000 B.C), have exploited this region establishing two distinct agroforestry systems linked strictly to the seasonal transhumance. Wooded pastures of oaks (*Quercus* spp.) prevail in highlands providing understory grazing, wood and acorns. Lowlands are dominated by areas of wild pears (*Pyrus* spp.) and olive trees, which by domestication provide fresh and dried food/fodder and also acts as an in-situ germplasm conservation basin.



4 TREE SPECIES

Quercus spp. colonize highlands (600-1200m) with *Q. pubescens* being the most diffused followed by *Q. ilex* and to a lesser extent *Q. suber*, which prefer the lowland (200m). *Pyrus pyraster*, *P. spinosa*, *P. amygdaliformis* and *O. Oleaster* dominate lowlands and were used as rootstock in the past. Noteworthy is the occurrence of wild apples (*Malus domestica*), endemic to this region at 600m along the slopes.



Traditional grafting on wild pear tree

5 PRODUCTS AND USES

To cope with unpredictable weather conditions that are typical of Mediterranean climate, the two agroforestry systems basically allow a diversified forage (herbage, tree foliage, acorn and fruits) that is spread on a large space and deferred in time. Most important productions are milk, meat, wool, and fruit to be processed into curd, cheeses, ricotta, butter, sausages, rugs and carpets, socks, blankets, traditional clothing, dry fruit and jams, etc. Plenty of direct and indirect uses and products originate from trees, like firewood, coal, agricultural equipment, fences, vineyard stakes, timbers, furniture, handcraft, traditional masks and folk clothing, etc. Additionally, a range of ecosystem and social services are provided (landscape management, carbon sequestration, fire prevention, etc.).

6 LANDSCAPE MANAGEMENT

Agroforest management in highlands is associated to summer and early autumn understory herbaceous pasture under oaks, providing wood to the community, shadow and acorns to sheep, cow and pig herds. Anthropic impact on this system is minimal and involves the maintenance of dry-stone walls and paths while, ecosystem functions such as weed, shrub and sucker regrowth control are performed by herds.

In lowlands wild pear and olive tree stands are used as understory pasture and, in the past, plants were used as rootstocks for local varieties. In Sardinia, this practice is well known, up to the point that old orchards were obtained by in situ grafting. Still, there is a great difference between the orchard grafting and the one adopted in pastureland. Indeed, beside the chaotic distribution of grafted trees, often located a long field borders or paths, the grafting point was above the livestock reach (1.50-1.80 m) and a rich range of varieties, with different ripening periods, was used. This make fruit available from May up to November for human food and herds fodder.

WORDS FROM THE FIELD

Alessandro LONGU

(farmer from Bolotana):

“As my grandfather and father, I still move my flock once a year from the lowland farm to the highland at 900m altitude. The main advantages gained by transhumance are to prolong the seasonal green herbage offered to dairy ewes, supply a high-quality pasture, sustain milk production in late spring and also animal welfare. The only disadvantage is the limited infrastructures and agricultural equipment available in highland farms.”



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