



Sheep Agrosilvopastoral Farming

Authors

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SOIL NEEDS ASSESSMENT

Drivers

The past conversion from woodland to pasture lands, followed more recently by intensification of the sheep farming system and current land abandonment; Climate change leads to increased aridity, prolonged drought periods and extreme precipitation events. The combination of increased drought and extreme precipitation often leads to increased soil erosion.

Pressures

Overgrazing and over-exploitation of the soil (fodder cultivation with intensive techniques) in the past but still visible; High flock density correlated with imbalance in the feed supply chain and lower farm's feed self-sufficiency; The frequency of megafires and extreme wildfires, that are soil erosion multipliers, is increasing with climate change.

State

Low fertility and production potential limit arable crops, implying lower feed-sufficiency level. Natural pasture directly consumed by sheep grazing are dominant. Human activities have shaped the landscape promoting Quercus suber for cork production and lowering the tree density (agroforestry). Land abandonment has cascading effects on gamma biodiversity and fire risk.

Impact

Permanent grasslands provide high soil carbon sequestration potential but the soils' pressures determine: loss of i) soil (5 cm lost since 1980), ii) carbon stocks and iii) biodiversity; decline in water quality (downstream); fire risk increase; reduction in fodder production.

Response

Maintaining pastoralism with site-specific development policies is crucial for maintaining soil and landscape qualitative traits. Encouraging the regrowth and development of potential vegetation in unsuitable soils for grazing (high slopes). To enhance the role of the forest components in the performance of agro-livestock farms and the provision of ecosystem services.

KEY MESSAGE

To promote the improvement and conservation of agrosilvopastoral soils, as well as boosting awareness concerning Soil Health and its proper management at local level represent a strategic objectives. On the other hand, depopulation and abandonment are the main bottleneck for implementing effective solutions for the survival and attractiveness of these areas.



REGIONAL INFORMATION

This study area is the upper part of the Tirso Valley watershed, located in Central Sardinia and characterized by acidic soils derived from granitic rocks.

Dominant land use	Less than one third of the Tirso valley (104,536 ha) is characterized by silvopastoral land uses, mainly based on dairy sheep farming systems, with a gradient of heterogeneous land use ranging from forest (73,745 ha) to arable lands in the low valley, (more than 75,700 ha).
Secondary land use	Shrublands characterized by Mediterranean maquis, permanent pastures, urban areas.
Climatic Zone	Mediterranean, with a 3 months drought in Summer and rainfall in Autumn and Spring.
Soil WRB classification	Mainly ROCK, OUTCROP, LITHIC XERORTHENTS.
Soil type	1. Clay accumulation, shallow water table and salt accumulation; 2. Shallow, moderately fertile and with relatively high amounts of organic matter; 3. Poor fertility, high erosion risk (slope), characterized by stoniness and rockiness; 4. Shallow and acidic soils.
Dominant topsoil texture	Mainly from sandy to sandy-argillaceous soils. Erosion (water), desertification.
Soil threat(s)	Erosion (water), desertification. The region grapples with land abandonment and fire risk.
Representative for regions	ES61 (Andalusia), ES42 (Castilla la Mancha), ES43 (Extremadura) / EL65 (Peloponnese), EL43 (Crete), EL62 (Ionian Islands) / ITF4 (Apulia), ITF6 (Calabria), ITF2 (Molise) / CY (Cyprus). Other agrosilvopastoral Mediterranean regions.

STAKEHOLDERS INTERACTION

23 June 2023
Ollolai, Nuoro Province, Sardegn

7 Policy and government

4 Soil and Other Advisors

1 Business

17 Research community

6 Farmer/land Owner

2 CSOs and NGOs

Relevant Soil Mission Objectives

