



POLICY

SUSTAINABLE MANAGEMENT OF FORAGE SYSTEMS IN SARDINIA

KEY MESSAGES

- Promote local seeds adapted to the Mediterranean climate.
- Diversify crops and practices to foster resilience.
- Counteract soil acidification with local amendments.
- Integrate precision technologies into business management.
- Strengthen technical advice and training of breeders.
- Promote sustainable and regenerative agricultural practices.
- Promote stable dialogue between research, businesses and farmers.
- Enhance field experiences and participatory experimentation.
- Include forage systems in regional climate strategies.
- Building short and sustainable supply chains on co-design and innovation no.

Summary for policy makers

Sustainable management of forage systems represents a crucial challenge for the future of Sardinian agriculture, which is increasingly exposed to environmental and structural crises. The combination of recurrent droughts, pasture abandonment, and biodiversity loss requires the development of adaptive strategies capable of combining productivity, resilience, and land conservation. The international projects **SALAM-MED**, **MONALISA**, and **ZOOTRACK**

They have started a co-design process in Sardinia between research, breeders, agronomists and seed companies to strengthen the capacity of the forage system to respond to climate change.

The goal is to create a stable dialogue between seed production, sales, and use, improving the quality of demand and raising awareness of agronomic choices. The fragmentation of the seed supply chain and the lack of local varieties suited to the Mediterranean context are penalizing the efficiency and sustainability of livestock farms.

At the same time, soil depletion due to excessive tillage, repeated cutting, and lack of mineral replenishment reduces fertility and increases costs. The climate crisis amplifies these effects, making new strategies based on **crop diversification, technological innovation**, and the **active involvement of farmers urgently needed**.

A resilient forage system can help reduce dependence on imported feed, support the quality of local production, and ensure the profitability of agro-pastoral farms. Sardinia, with its rich pastoral tradition and diverse ecosystems, represents an ideal laboratory for testing integrated approaches based on scientific knowledge, local practices, and precision technologies. It is essential that regional policies foster synergy between public research, seed companies, and breeders.



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placing the sustainable management of forage systems at the heart of climate adaptation and mitigation strategies.

The research

Technical evidence and field experience have confirmed that **diversification** is key to ensuring stability and productivity in Sardinian forage systems. Combining annual, perennial, and self-seeding species allows for coverage of the entire seasonal cycle, reducing climate risk and improving forage quality.

Grasslands, while productive, entail high costs and soil depletion; pastures, if well managed, promote biodiversity and fertility but require long establishment times and seeds suited to the Mediterranean environment. The farmers involved have shown positive results with legumes such as subterranean clover, but have highlighted critical issues related to frost.

Agronomists emphasized the role of soil acidity as a limiting factor. The use of calcium and magnesium carbonate-based amendments is essential for supporting microbial vitality and legume growth. The importance of sourcing certified seeds specific to local conditions, avoiding choices based solely on price, also emerged.

The adoption of **precision technologies** (GPS surveys, satellite imagery, digital platforms) allows for monitoring biomass, plant cover, and water status, providing useful data for targeted agronomic decisions. However, structural problems persist: scarcity of local seeds, high costs, logistical difficulties, soil acidification, poor integration between research, commerce, and businesses, and a lack of technical and professional support.

In summary, the sustainability of forage systems requires an integrated approach that combines technological innovation, agronomic knowledge and active participation of breeders, promoting public-private collaboration networks and shared training courses.

Recommendations for policy makers

- Promote quality local seeds.** Launch regional programs for the selection, production, and certification of native varieties adapted to the Mediterranean environment, supporting the Sardinian seed supply chain.
- Encourage crop diversification.** Provide agri-environmental measures and specific rewards for farms that adopt mixed crops and integrated grazing strategies, reducing dependence on external fodder.
- Support agronomic innovation.** Promote conservative and regenerative practices (crop rotations, controlled grazing, reduced tillage) that improve soil fertility and water retention capacity.
- Combat soil acidification.** Introduce incentives for the use of local limestone and magnesium soil improvers, including through agreements with regional producers, and disseminate technical knowledge on their use.
- Strengthen technical and professional support.** Create a stable network of public agronomic and zootechnical consultancy that supports breeders in the choice of seeds, pasture management and precision techniques.
- Promote precision management.** Integrate satellite systems, sensors, and digital platforms into rural development programs to optimize resource use and monitor forage system performance.
- Strengthen territorial co-planning.** Establish permanent discussion tables between research, agricultural companies, public bodies, and seed companies to co-create

adaptive solutions based on local needs.

- Promote field experiences.** Support demonstration networks and pilot projects that disseminate best practices and experimental results, encouraging peer learning.
- Integrate forage systems into regional climate strategies.** Recognize their role in climate change mitigation and carbon sequestration, including them in resilience and adaptation plans.
- Establish targeted and synergistic incentives.** Agricultural policies must combine economic support, training, and innovation, avoiding fragmented interventions and encouraging the development of sustainable short supply chains.

A far-sighted regional policy must support not only productivity but also the ecological regeneration of forage systems, making livestock farmers protagonists of the agroecological and digital transition in Sardinia.



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