

GOOD PRACTICES IN *DEHESAS & MONTADOS:* *Penning as a technique for scrub control*



Ancient practice in which the animals are confined into mobile enclosures over night or during siesta time, with the aim to fertilise the soil as well as protect them from predators.

Benefits:

- 1 Control of scrub invasion.
- 2 Improvement of ecosystem functionality: water and nutrient cycles; productivity and community dynamics.
- 3 Increase in pasture quality and productivity.
- 4 Increase in soil cover.
- 5 Increase in soil quality and fertility.



Left: Paddock before penning process Right: Paddock 6 months after the practice began at Mundos Nuevos farm, Retamal de Llerena (Badajoz)

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Background

In recent years, many dehesas are experiencing scrub invasion due to the abandonment of grazing practices or their inadequate application. This is leading to a loss in pasture production, as well as other environmental services, such as less water retention and a higher risk of erosion and forest fires.

Penning and dunging is a practice that serves as a control measure for scrub invasion; the recovery of unproductive land; the improvement of ecosystem functionality and the increase of pasture productivity.

Implementing the Practice:

Where?

It is appropriate in areas suffering from scrub invasion; that have been recently cleared or that are becoming invaded; and/or which have unproductive soil.



Paddock invaded by scrub (prior to penning) in Mundos Nuevos farm, Retamal de Llerena (Badajoz)



Penned sheep in Mundos Nuevos farm, Retamal de Llerena (Badajoz)

When?

At any time of year, except periods of heavy rain when the soil is waterlogged. The livestock will spend the night in the pen or will rest in it during siesta hours.

¿How?

Clearing the scrub

If the scrub is taller than the animals or is very woody it is advisable to cut it down to facilitate its decomposition.

Setting up the pen

Pens are constructed with metal hurdles or electric mesh fencing. Hurdles are more resilient and secure whilst being harder to transport. The electric mesh fencing of plastic and metal twine is much quicker to set up and reduces costs, but should the scrub or grass make contact with the mesh or the ground be very dry it could cause a loss of voltage. A height of 90-100 cm is required for penning sheep and at least 110 cm for goats.

The area of the pen will depend on the number of animals. This is usually calculated as 1-2 m²/sheep.

Moving the pen

The pen will be moved every 3-4 days on average, usually to an adjacent area. The frequency of rotation will depend on soil characteristics; orography and precipitation, ensuring that the livestock is never on waterlogged ground.

Other important considerations:

It is a good idea to protect the younger trees within the paddock using hurdles or other materials.

The practice of penning should be combined with appropriate grazing management, ensuring that the penned area has an adequate pasture recovery period.

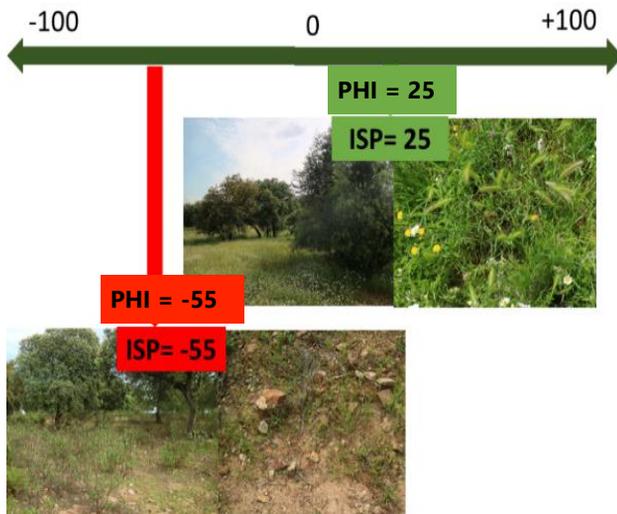
Ecological Monitoring Results

As part of the Iberian *Dehesas & Montados* project, this practice has been assessed through various indicators relating to ecosystem health, fertility and soil quality.

Improvement of ecosystem health

The use of penning as a measure against scrub invasion has shown to improve ecosystem health in comparison to areas where the practice was not applied.

The *Ecological Health Index* is a scoring system used to gauge ecosystem health based on 11 biological indicators. From the various indicators analysed, the average values for soil cover; soil compaction; grasses, perennials and legumes cover; shrubs; adult tree health; pasture regeneration and productivity were all higher in the penning areas when compared to the control areas, reflecting significant **improvement in ecosystem functionality under the applied practice.**

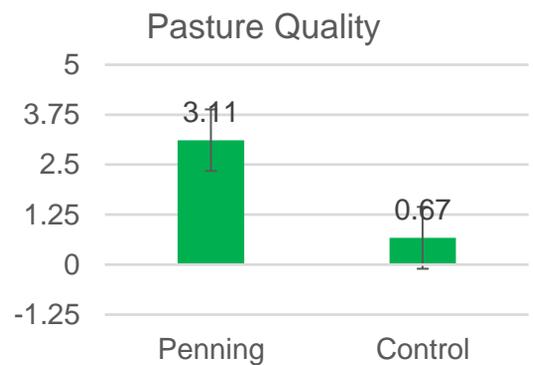


Examples of EHI scoring. In red, control area without penning at Mundos Nuevos farm [EHI = -55]. In green, area after two years of penning at Mundos Nuevos farm [EHI = 25].

Increase in productivity and pasture quality

The results show an increase in pasture quality and productivity.

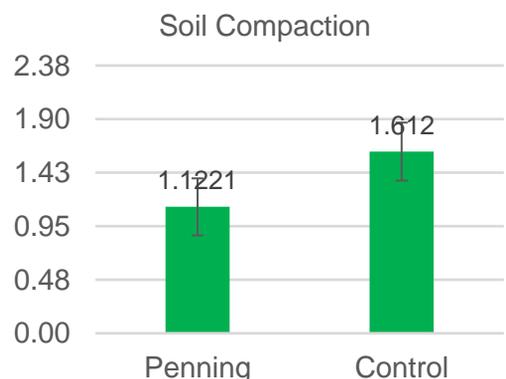
After two years of penning, the parcels under said practice showed a greater legumes coverage and pasture digestibility.



Pasture quality on a scale of 1-5 in the penned parcels VS. parcels without penning (control). 1 represents lower quality while 5 represents higher quality, bearing in mind the legumes and grasses coverage as well as pasture palatability.

Reduction in soil compaction

On the other hand, the penning areas showed lower values in soil compaction, presenting an improvement in functionality of the water and nutrient cycles.



Case studies within the project

Dehesas & Montados:

Mundos Nuevos Farm (Badajoz, ESP)

Penning happens at the end of the Summer and beginning of Autumn. As the livestock require supplementary feeding during this period, the practice takes this as an opportunity for scrub control; restoring unproductive soils and to avoid overgrazing the pasture. The scrub is cut prior to this. A flock of 800 sheep remain in each pen from 3 to 6 days, depending on the soil conditions, rainfall, etc. If they remain here 24 hours a day the stocking density is around 4-9 m²/sheep, depending on the soil and how many days they will be there. If they only spend the night the stocking density is 1-2 m²/sheep.

El Guijo Farm (Cáceres, ESP)

Penning happens in the summer, during the animals' siesta time, with the aim of scrub control and fertilising the soil through dunging. It is set up using electric wire mesh and hurdles and a flock of around 1000 sheep, with a stocking density of roughly 2 m²/sheep. The pen is moved every four days on average, occasionally lasting up to 7 days at a set location. Following this process, the pasture is left to recover for around 6 months.

Merineando Farm (Cáceres, ESP)

Penning is undertaken in the Autumn, during the night. The aim of this is to protect the lambs from predators; fertilise the soil through dunging and to control the scrub. The pen is constructed out of metal hurdles, allowing for an area of 2 m² /sheep, and is moved to an adjacent area every 2-3 days. If it rains, however, it is moved daily.



Penning and dunging at Merineando Farm (Cáceres)

Work carried out within the Iberian Dehesas & Montados Project. The project goal is to improve the ecological state and economic viability of the dehesa via the application of various cultural practices. Project coordinated by Asociación Trashumancia y Naturaleza, WWF España, ANP-WWF Portugal, with support from the MAVA Foundation.

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