

PRACTICE ABSTRACT 13

Practices to promote carbon sequestration and nutrient recycling in agroforestry systems

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WP4:
Re-Managing at farm level for livestock resilience

Agroforestry Innovations for Sustainable Livestock

Researchers from the project **Re-Livestock** cooperate with farmers in **Spain, Portugal, UK, and Denmark** to investigate novel **agroforestry practices**. The vision is to promote **animal welfare, carbon sequestration, and nutrient cycling** in outdoor livestock systems while supporting **farm feed supply**.

Evaluating Agroforestry and Grassland Practices

A range of new **agroforestry** and **grassland practices** will be evaluated:

- In **Spain**, sheep herds will test **rotational grazing** and pastures enriched with **legumes** to increase pasture production and quality in **silvopastures**.
- With a similar objective, farmers in **Portugal** will test new **shade tolerant pasture mixtures** in existing **stone pine (Pinus pinea) silvopastures**. These practices are also expected to benefit **tree growth** through improved **nutrient status** of the soil.
- In **UK**, **grass-fed dairy cows** will get access to **woodland** in the summer to reduce **heat stress** and thereby improve **animal welfare** and **productivity**. A second trial will test different processing techniques for **willow fodder** namely, tree hay, chipped, silage and pellets. These samples will be analysed for **nutrient, tannin and salicin content**, alongside **methane emissions**.
- In **Denmark**, **outdoor pigs** will forage **willow (Salix sp.)** in two animal densities to test the effects on **pig growth, feed efficiency**, and **soil nutrient load** and distribution (Figure 1).

- Across borders and experiments, diverse **forage samples** from the **agroforestry systems**, e.g. **willow** and **pasture mixtures** will be analysed to explore their **nutritional value**.



Figure 1. Growing pigs foraging regrowth of willow shoots with leaves, Denmark.



Figure 2. Experiment in Portugal testing shade tolerant pasture mixtures in Pinus pinea silvopastures.