Pasture can reduce carbon footprint from sheep production by almost one third.

Transhumant sheep systems, both by foot and lorry, achieve relatively low carbon footprint, compared to sedentary farms. Mobility of grazing livestock can thus be considered as a strategy to promote climate change mitigation.

This is the conclusion in a research paper (https://link.springer.com/article/10.1007/s11367-023-02135-3) from Basque Centre for Climate Change, published in The International Journal of Life Cycle Assessment.

“We found that transhumant systems can reduce the carbon footprint (CF) from sheep production by almost one third, compared to sedentary farms”, says Postdoctoral researcher Guillermo Pardo at Basque Centre for Climate Change in Spain. He’s first author of the paper, and leader of Work package 3 in CircAgric-GHG. The paper is one of the project’s deliverables.


STOP

Less external input provides lower carbon footprint

Inventory data from 20 Spanish sheep farms were analysed to estimate the carbon footprint per kilo lamb meat produced. The farms were divided into three different sub-groups representing typical management practices in the region. Sedentary farms stay in the same area the whole year, using local pasture only for some months of the year. The other farms are mobile and utilize pasture all year. Some move by truck, and others travel on foot.

Prado explains,

“Most external input on sedentary farms is imported soybeans, whereas grazing sheep use natural pasture resources, and fossil fuel use is minimal. At the same time natural pastures don’t require external fertilizers, which is beneficial for circularity”, says Pardo.

Improved productivity and ecosystem rewards

The researchers were somewhat surprised to find that the animal productivity was also better. The sheep live longer and have a higher fertility rate.

“The animals are moved from one location to another when it’s either too cold or too hot. This means that they live in an eternal springtime. The animals feel this, so the productivity is better.”

At the same time there’s an ecosystem reward. Transhumant sheep systems contribute to seed dispersal along the way while avoiding grazing during the flowering season, which benefits pollinators. The farmers who move the sheep on foot also maintain water points along the way, benefitting other animals as well.

Minor difference in carbon footprint from moving the sheep by foot compared to truck and lorry

“Interestingly, when we modelled this, the emissions were more or less the same for both the animals that were moved by truck and by foot,” says Pardo.

He explains that the move by truck from one pasture to another is quick. The trucks don’t consume much fuel, and with many animals in each truck, the carbon footprint per sheep is low when examined over the course of a year.

“However,” Pardo notes, “the animals are stressed by the move and lose productivity. When they arrive at the new pasture, the farmers need to supplement their feed with external food because the pastures are not ready yet.”

The animals that travel by foot spend a few weeks on the move. They eat the local forage along the way, and by the time they arrive, the new pasture is ready, eliminating the need for external feed.

“The trade-off is that the journey is also demanding for them, so the animals have higher emissions because they expend more energy,” concludes Pardo.

By: Anette Tjomsland Spilling

Photos from the case study areas: Raquel Casas

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Read the full article here (https://link.springer.com/article/10.1007/s11367-023-02135-3)

When is grazing sustainable?

Informative infographic video to understand the true impact of extensive (grazing-based) livestock farming on the environment. The information is broken down into 5 large blocks that gives a series of reasoned explanations based on scientific data:

- Biodiversity
- Carbon in the soil and albedo
- Competition for land use
- Competition for water use
- Greenhouse gas emissions (GHG) and their impact on climate change

News archive (https://www.circagric.org/news/)