NET ZERO & LIVESTOCK

How farmers can reduce emissions: LAMB

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Current sector snapshot

£1.3bn – Value of UK mutton and lamb production (2020)

Largest component of on-farm emissions from UK sheep production = Enteric CH_4; then N_2O (fertiliser and manure application to pasture)

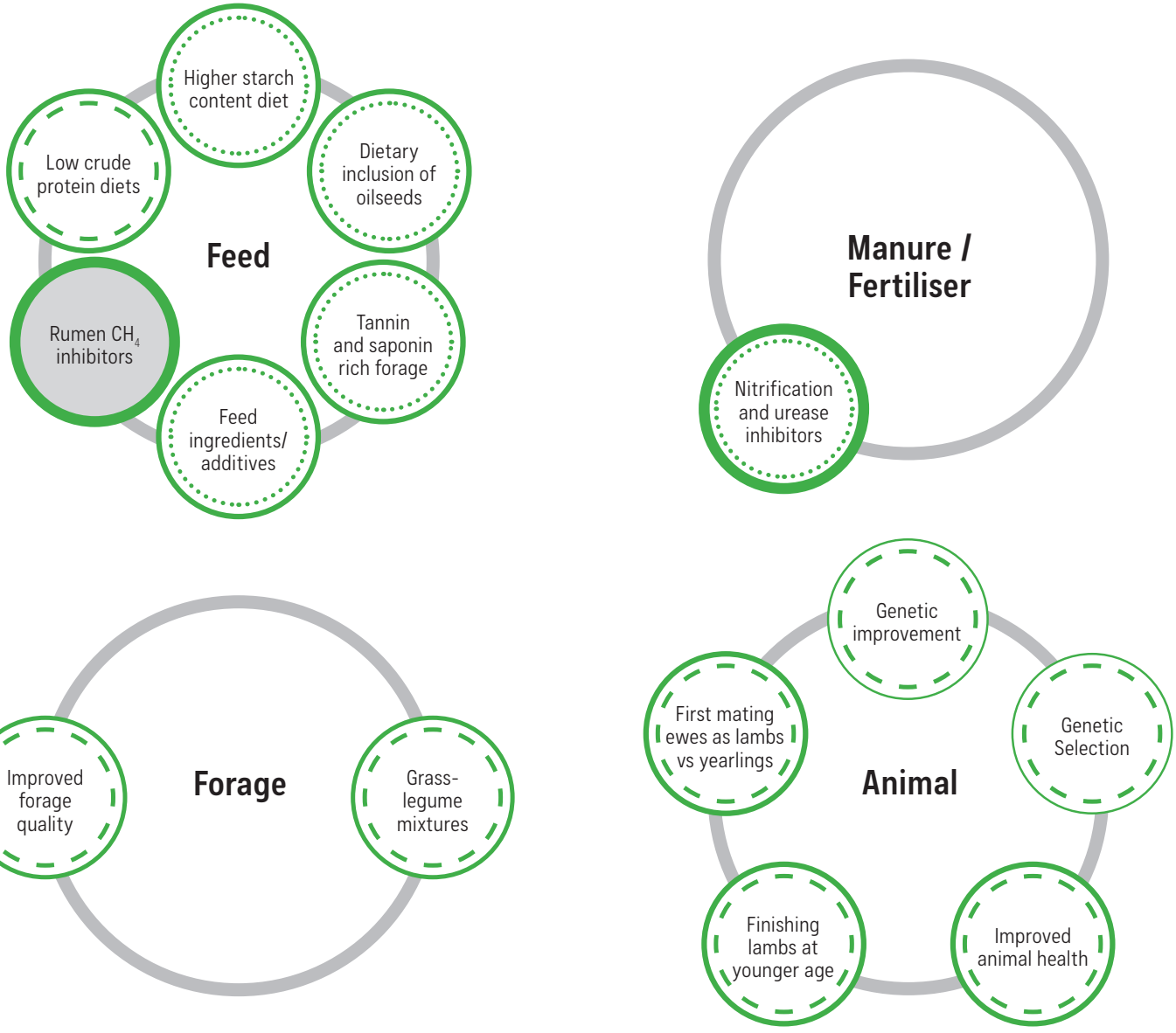
GHG emission intensity from UK sheep production influenced by farm type: Lowland systems = lower emissions

Average GHG emissions intensity of lamb –

Lowland = 11kg CO_2 - eq/kg of liveweight;

Upland & Hill = 13 – 18kg CO_2 - eq/kg of liveweight

Potential for mitigating GHG emissions in Sheep



Key	High	Medium	Low
Impact on Carbon Footprint	●	○	○
Cost	◌	◌	◌
Mitigation not yet widely available	●		

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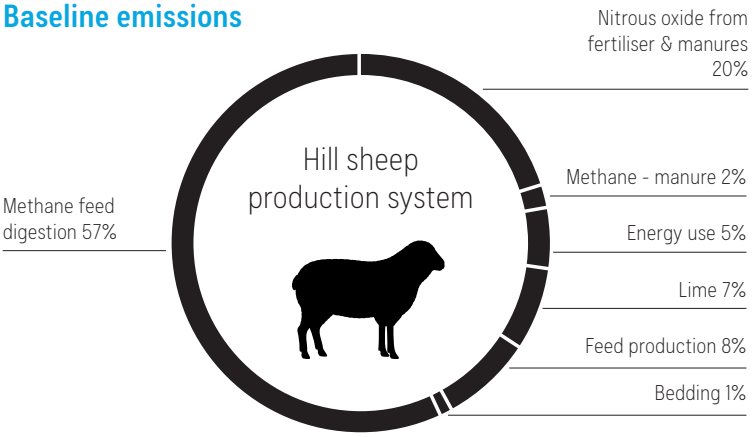
Putting it to the test: Hill sheep production system

Using real farms to calculate emissions generated by specific scenarios that are indicative of the potential savings available in the sector.

Farm facts: **Hill Farm One**

- 117ha platform
- Organic
- 690 Welsh ewes

Baseline emissions



Mitigation modelled

Mitigation	Carbon footprint (kg CO_2 - eq/kg milk)	% Change
Hill Farm One - Baseline	**16.09**	
Improved fuel efficiency	15.78	**-1.90%**
Legume grass mixtures	11.91	**-26.00%**
+ Improved sheep health	10.04	**-37.60%**
Improved sheep nutrition	10.04	**-37.60%**
Methane inhibitors	5.21	-67.60%

Farm facts: **Hill Farm Two**

- 93ha platform
- 428 Mule and 133 Texel ewes

Mitigation modelled

Mitigation	Carbon footprint (kg CO_2 - eq/kg milk)	% Change
Hill Farm Two - Baseline	**23.70**	
Improved fuel efficiency	23.50	**-1.90%**
Improved fertiliser use	22.90	**-3.40%**
+ Legume grass mixtures	19.60	**-17.50%**
Improved sheep productivity	17.30	**-27.20%**
Methane inhibitors	12.10	-49.00%

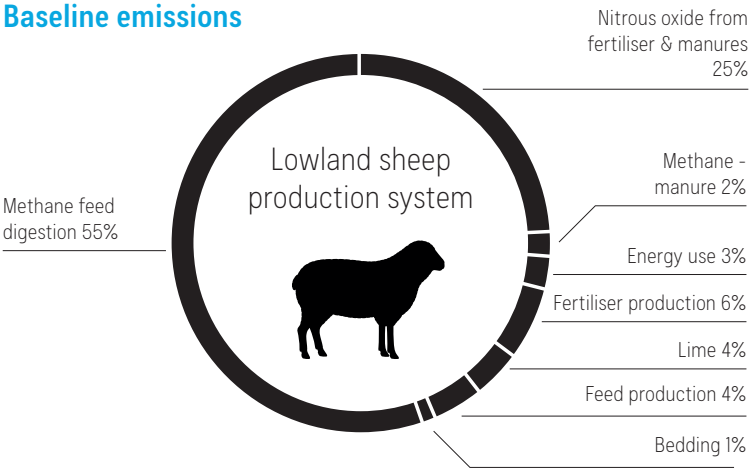
Putting it to the test: Lowland sheep production system

Using real farms to calculate emissions generated by specific scenarios that are indicative of the potential savings available in the sector.

Farm facts

- 233ha platform
- 900 Lleyn and 500 Abermax ewes

Baseline emissions



Mitigation modelled

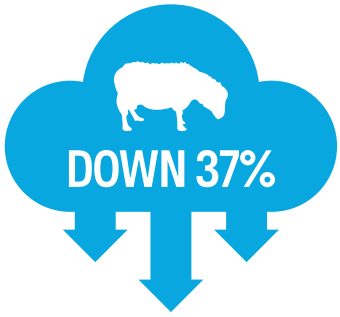
Mitigation	Carbon footprint (kg CO_2 - eq/kg milk)	% Change
Baseline	16.73	
Improved fuel efficiency	16.58	-0.98%
Improved fertiliser use	16.34	-4.40%
+ Nitrification inhibitors	15.88	-5.10%
Improved sheep productivity	14.38	-14.10%
Methane inhibitors	10.60	-36.70%

Hill Farm One

Overall, within this hill sheep production system, it was possible to **reduce the carbon footprint by 68%** when all mitigations were implemented.

Hill Farm Two

Overall, within this hill sheep production system, it was possible to **reduce the carbon footprint by 49%** when all mitigations were implemented.



Lowland Sheep Farm

Overall, within this lowland sheep production system, it was possible to **reduce the carbon footprint by 37%** when all mitigations were implemented.

Taking practical steps towards net zero: **LAMB**

Complete regular carbon audits using a reliable carbon calculator

- Establish baseline
- Identify hotspots
- Monitor emission reductions and changes in carbon pools.

Flock management whilst maintaining high level of production efficiency

- Reduce age at first lambing
- Increase lambing rate
- Reduce lamb losses
- Enable high lamb growth rate.

Improve quality and utilisation of forage

- Harvest early, increase grazing frequency, decrease regrowth interval, etc.

Maintain or enhance sward productivity, reducing need for artificial fertiliser

- Include legumes in pasture mix
- Promote soil health and fertility.

Adjust diet and consider carbon footprint of feed components and farm nutrient balance

- Increase starch & concentrate proportions.*

Focus genetic improvement on component traits

- Productivity relative to ewe size
- Feed efficiency
- Longevity, health, lamb growth
- Carcass traits.

Consider use of controlled release and protected urea fertilisers

- Time application of manure and fertilizer to optimise plant nutrient uptake
- Take soil nutrient status into account
- Carry out soil testing.

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*within recommended guidance levels