

Working towards net zero carbon emissions

# How do we reduce emissions from sheep?

## Practical Guide

Scotland is working towards the target to reach net zero carbon emissions by 2045. For the agricultural industry, this gives an opportunity to evaluate systems and practices, while looking to enhance flock efficiency and productivity, which will in turn reduce greenhouse gas emissions.

Globally, sheep release around 700 million tonnes of methane into the atmosphere per year (FAOSTAT 2020). However the level of methane emitted from sheep production varies vastly between various attributes, including, farm type, system, genetics, etc.

Improving the efficiency and productivity of a flock, typically results in a better use of inputs, and less waste in the system. The consequence of this is a higher level of profitability and a reduction of emissions.

**This practical guide takes a closer look at flock productivity**

### Enhancing Productivity

To optimise performance of a flock a good balance of health, nutrition and genetics is required. If one or more of these elements is poor the performance of the flock will slip, as shown in figure 1. Poor performance, leads to a lower level of output from the system, from a higher level of losses of ewes, lambs, growth rate, litter size, longevity, etc.

An example of this may be, health - lambs with a high worm burden.

This would typically result in a reduced growth rate and reduced feed conversion efficiency. Meaning the lambs would require:

- More feed to finish
- Take more time to finish
- Be on the farm longer, possibly eating into the feed supply for the breeding ewes

In this scenario the level of methane/kg of lamb would be higher than one that had a high growth rate, as it would have required less feed and resource from birth to market.

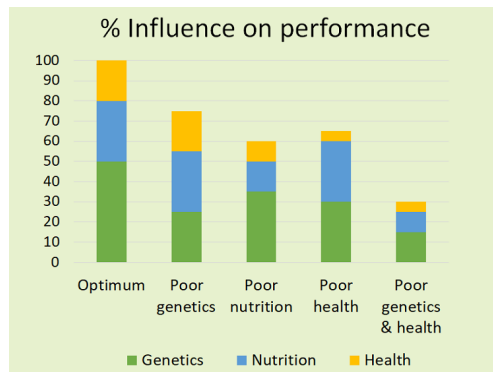


Figure 1- factors influencing flock performance



**Our Practical Guides cover five useful topics:**

1. Use energy and fuels efficiently
2. Renewable energy
3. Lock carbon into soils and vegetation
4. Making the best use of nutrients
5. Optimise livestock management

For more Practical Guides, Case Studies, information and to see what other farmers have done, visit [www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org)

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### Websites

[www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org)

See also:

[Farm Carbon Storage Network - SAC Consulting](#)

[SRUC Vet Services | Premium](#)

[Sheep & Goat Health Schemes](#)

[Lamb Crop 2023 - YouTube](#)



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## Nutrition

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Poor nutrition can effect flock performance in numerous ways e.g. poor ewe body condition score can reduce rearing rates, increase ewe mortality and reduce lamb performance. The stage of the production of the ewe determines her nutritional requirement. This will be higher during production (pregnancy and lactation) than when she is dry/maintenance (after weaning).

A ewe ration should meet two main requirements, first it should meet her nutrition needs for the stage of production whether she is dry, pregnant or lactating. Secondly, it should maximise efficiency while continuing to provide a margin for the farm. Grass and forage will typically be the cheapest source of nutrition for the ewes, this is a resource to improve and maximise. For the majority of the year, a ewes requirement can be met through grazing alone. However, depending on grazing availability during periods of high demand e.g., late pregnancy, additional supplementation may be required.

This additional supplement does come at a cost, but when compared to the production benefits it can be outweighed.

*Example - a ewe rearing twins V a ewe rearing a single*

The ewe rearing twins will have a higher feed requirement, and for this reason produce more methane, as this is associated with ruminant digestion. However she will rear two lambs, meaning the methane produced per kg of lamb will be lower, to that of the single rearing ewe.

## Methods to Reduce Emissions through Nutrition

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- Maximise home grown grass and forage, limiting bought in inputs
- Introduce rotational grazing, benefiting grass quality, animal performance and increasing stocking density
- Increase clover and legumes in swards to reduce imported inorganic fertilisers
- Use of mixed species swards to manage sward quality
- Discuss a feed plan with a nutritionist, to tailor inputs and reduce costs
- Balance ewe requirements for the stage of production, to optimise feed



## Methods to Reduce Emissions through Genetics

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Research has shown there is variation between sheep in the level of methane production, even on a flock level, that are managed the same and offered the same diet. Genetics can be selected to assist in reducing emissions from sheep systems, as shown below.

- Looking at the suitability of the breed of choice for your farm and environment
- Ensuring the tup of choice is achieving the flocks goals e.g. replacements, growth rate, etc.
- Use of performance recorded animals
- Understanding the selection pressures for the flock

*Farming for a Better Climate (FFBC) is funded by Scottish Government and delivered by SAC Consulting. Keep up to date with the project via our webpages and newsletter at [www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org) or on Facebook and Twitter [@SACfarm4climate](https://twitter.com/SACfarm4climate)*