



Livestock Towards net zero

Emissions from the agricultural industry totalled 45.4 million tonnes of carbon dioxide equivalent in 2018¹. Over 47% of these emissions are caused by livestock emitting methane through digestion¹. The challenges around the livestock (beef and lamb) sector to achieve net zero in any reasonable time frame appear to be significantly greater than in other sectors. However, despite the emission challenge there is also substantial potential to deliver carbon sequestration in the sector. Many of the potential solutions will require investment, not only of capital but of ideas, time and management resources.

Emission challenges

Emissions intensity

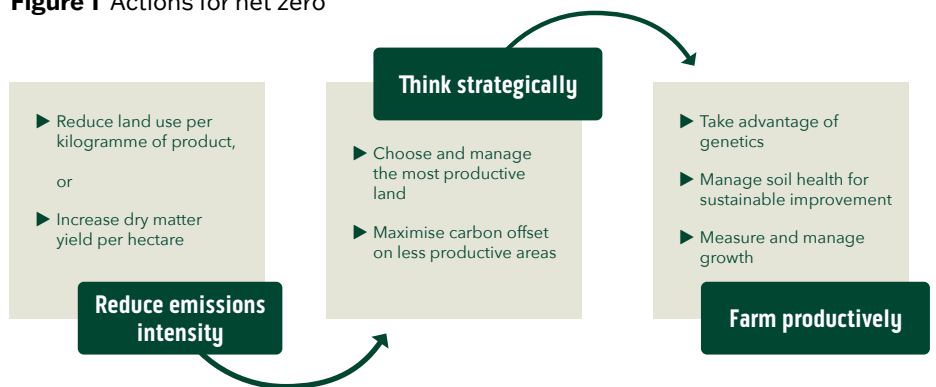
There has been steady reduction in emissions from the beef and lamb sector mainly due to improved management practices on farm and improved productivity. The UK average emission intensity for beef is less than two-thirds of the global level, indicating that British beef and lamb are among the most efficient and sustainable meat in the world². This is mainly due to our extensive, grass-based systems. There is however, still change needed in the sector to further reduce emissions and transition to net zero.

87% of UK beef is produced using predominantly forage based diets².

Valuing less productive land

The relatively high emissions from the sector are reflective of the fact that much of UK livestock inhabits some of the least productive land in the country. As such, driving performance on this land has always been, and will remain, challenging.

Figure 1 Actions for net zero



Approximately 3.7 million hectares of permanent pasture supported grazing of beef and sheep in England in 2019, 41% of all agricultural land area³

Land use per kilogramme of product is an important factor in achieving net zero emissions and greater appreciation of this among producers would go a long way to making improvements. The nutritional value of red meat should also not be ignored and data shows that emissions per percentage of recommended dietary intake (RDI) is lowest for beef⁴.

Profitability and fragmentation

The ruminant sector is relatively fragmented when compared to other sectors such as dairy, pigs and poultry. The significant range of performance is partly down to the range of systems in use across these two sectors, also the fact that the sector operates on a large variety of holdings across a wide geographic spread. In addition to this, the profitability levels in the sector are well reported to be below that of other sectors. This lack of profitability provides a genuine and practical barrier to achieving net zero emissions.

Short term solutions to reduce emissions

Farm productive land efficiently

Working to achieve further production efficiencies is a key part of achieving net zero. Measures like using natural feed additives and further improving cattle and sheep health will help reduce methane emissions from livestock. De-stocking unproductive land and culling unproductive animals will also assist in reducing emissions.

Reducing the area of land required to produce the same or similar amount of product output is key to reducing emissions from the sector. This will involve intensifying production on land which is more productive by increasing the dry matter potential of this productive farmland. This must not be achieved by an increase in nitrogen fertiliser input but should be approached through investing in soil management and soil health.

Nutrient and manure management

Unlocking the potential of soil on your farm may include improving the drainage, addressing the nutrient status of the soil (including lime) and measuring dry matter yield of individual fields. These activities can all contribute to growth of output per hectare.

Low carbon farming practices will also involve the effective management of nutrients on the farm, including slurry and farmyard manure. Investment in storage may be necessary on many farms as well as ensuring that excess rainfall is captured, diverted and not allowed to run into store. This helps to maximise the value of manure, which in turn helps to drive the response rate of grassland crops to animal manure and reduce the reliance on nitrogen fertilisers, which is a major source of emissions.

Long term investments

Raise productivity

On-farm inefficiencies adds economic costs to businesses and inhibits productivity. There is huge scope for beef and sheep farmers to invest in production methods and practices to increase profits and reduce carbon emissions by improving productivity over the long term (Figure 1). Examples of this may include:

- **Investment in genetics and improved breeding programmes. The potential to reduce emissions from genetic gain is significant. There is scope to improve productivity by increasing output or improving quality from a relatively minor investment.**
- **Upgrading feed management systems may help to increase accuracy of feeding, reduce reliance on purchased concentrates and effectively increase the productive capacity of the farm.**
- **A change of culture is required towards a “you can only manage it if you can measure it” approach, where farmers take a more proactive stance on managing data on their farms. Investment in, and wider adoption of, weighing scales will ensure that daily liveweight gain can be monitored more closely and that changes to management practices can be implemented and measured.**

Carbon offsetting

Given the type of land and structure of the beef and lamb sectors, offsetting of carbon will form a significant part of the journey in achieving net zero emissions. The large areas of land that are managed by producers provide significant opportunity of increased sequestration or capture of carbon. Non-productive areas of the farm should be considered for alternative land uses such as tree planting, peatland restoration, habitat creation or other amenity benefits. Agro-forestry in pastoral systems also offers opportunity for carbon sequestration and can be integrated into grazing systems offering shade, shelter and fodder.

The information contained in this factsheet is for general purposes only and is not intended to constitute legal or professional advice. You should seek specialist advice should you have specific queries. This factsheet is prepared by/based on information from third parties and is believed to be correct. However, neither Agricultural Mortgage Corporation plc nor its employees, officers or agents warrants its accuracy or completeness or accepts responsibility for any losses or damages whatsoever caused by reliance on information contained in this factsheet.

Please contact us if you would like this information in an alternative format such as Braille, large print or audio.

The Agricultural Mortgage Corporation plc, registered in England & Wales, no.234742. Registered office: Charlton Place, Charlton Road, Andover, Hampshire SP10 1RE. Telephone: 01264 334344. The Agricultural Mortgage Corporation plc is a wholly owned subsidiary of Lloyds Bank plc.

www.amonline.co.uk/sustainable-agriculture

References

1. Defra. Final UK greenhouse gas emissions national statistics 1990-2018. Published online 2020. <https://data.gov.uk/dataset/9568363e-57e5-4c33-9e00-31dc528fcc5a/final-uk-greenhouse-gas-emissions-national-statistics>
2. NFU. Climate friendly farming. The facts about British Meat. Published online 2020. <https://www.nfuonline.com/nfu-online/sectors/livestock/climate-friendly-farming-the-facts-about-british-meat/>
3. Defra. Key crop area and livestock numbers. Published online 2019. <https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june>
4. McAuliffe GA, Takahashi T, Lee MF. Framework for life cycle assessment of livestock production systems to account for the nutritional quality of final products. Food and Energy Security. Published online 2018:1-33. https://repository.rothamsted.ac.uk/download/528d6a81ce7ced0fb396a2ba248c6eea133339d446088ccfd86047e12c0b4ce/4091626/McAuliffe_et_al-2018-Food_and_Energy_Security.pdf