



Farming Enviro-Map

Year Three Review

Foreword



Preparing our industry for what changes lie ahead will be critical. British farming provides safe, traceable and affordable food – but the current and continued uncertainty is a reminder we must never take such food for granted.

Caroline Mason
Head of Agriculture

As an ethical and sustainable retailer, the Co-op invested in a three year Enviro-Map project to provide a consistent online tool for mapping the environmental impact of producers across our seven Co-op Farming Groups.

We believe that taking a proactive approach to finding a more sustainable future for farmers will not only help to increase efficiency but will also demonstrate to consumers that we are taking their requirements seriously.

As a food and farming industry, ultimately, we can have limited control over what shape government policies will take. What farmers can do however, is focus on improving their individual business performance. This means taking stock, analysing and then working to make businesses and enterprises as ‘fit for the future’ as possible – whatever may lie ahead. Those who remain open minded, adaptable, analytical and prepared to learn have the greatest chance of doing this effectively. We are not, after all, in the industrial era anymore, but in an era of knowledge and harnessing the power of data can transform businesses. A farmer who knows their farm’s own data has a much better understanding of their strengths and vulnerabilities and can make more informed management decisions towards their own objectives. The adage, “you can’t manage what you cannot measure’ is a timely one”.

Key to achieving personal and business resilience, is a recognition that the future of agriculture and retail industries are inextricably linked, and so collaboration, knowledge sharing, and personal support are crucial. The current era of competition and comparison often inhibits our natural sense of connection and can engender isolation. Life can feel like a battle to be won. But, we must work together to seize opportunities and strive for a future united by food.

No two farms are the same, but there are some basic indicators which can help assess each farm unit’s environmental resilience. The last three years of data collated and analysed through the Enviro-Map project, sets Co-op farmers in a strong position to identify the areas that could have an impact, where the risk needs to be minimised, or where benefits could be enhanced.

Taking stock of the farm’s current position is essential for understanding environmental benefits already being delivered, and to develop an accurate baseline from which improvements can be monitored and reviewed.

Introduction

The Co-op Farming Enviro-Map project has provided a unique insight into Co-op’s agricultural farming groups, helping to align our goals with national objectives, and showcasing the extraordinary work that our farmers do day-in, and day-out.



Throughout its history, the Co-op has been a leader within UK retail. Today, the Co-op aims to continue this with our commitment to halve direct emissions and reduce supply chain emissions by 11%, approved by the Science Based Targets initiative (SBTi). The SBTi confirmed that the target, set for 2025, is aligned to the UK’s net-zero emissions target, and the 1.5°C target of the Paris Agreement. Co-op’s chief commercial officer, Michael Fletcher, said: “How we do business really matters. The world is experiencing a climate crisis and we need to work together to avoid it. Accelerating action is the only way to mitigate and reduce impacts on our natural world, and to ensure stable food supply chains in the future.”

Further to Co-op’s emissions targets, we aim to ensure our partner farms are helping to reduce their environmental impact through efficient farming practices and unique measurement initiatives such as the Farming Enviro-Map.

To achieve net zero greenhouse gas emissions by 2050, a new report from the Committee on Climate Change recommends the consumption of beef, lamb and dairy being cut by around 20%, and around a fifth of current agricultural land to be used to plant trees. However, the NFU has reiterated that improvements in productivity, carbon capture and renewable energy production are the most effective ways to reach agricultural net zero targets.

The impact of climate change is being felt across the globe, with producers having to react to changing and challenging conditions more often than ever before. At the Co-op we believe that our farmers are well prepared for the journey towards net zero, with agriculture providing a tangible solution to some of the environmental challenges we face.

In addition to climate change, the changing political landscape also provides challenges for agriculture. Following the proposed exit from the EU, the UK will no longer be part of the Common Agricultural Policy (CAP). In its place will be a new domestic agricultural policy, the Environmental Land Management Scheme (ELMS). Under the new system, farmers will be paid to deliver “public goods” such as improved soil health, better quality air and water, and higher animal welfare standards.

As part of the Enviro-Map programme the Co-op has implemented a three-year project working with our Farming Groups to measure environmental impact, assess biodiversity credentials, and provide advice to promote efficient farming practices. This unique programme has provided insight into many key agricultural focus areas, helping our producers to be at the forefront of national change and directives.

The Co-op will seek to continue our positive work together with our producers, to ensure productive, environmentally friendly, and resilient farming for the future.

Carbon Trust

The Carbon Trust, reaffirms its views on the importance of the Co-op Enviro-Map project.

“The Co-op continues to bring about positive change through its Enviro-Map project. The Carbon Trust would like to reiterate that it is thanks to the support of organisations like the Co-op, and initiatives such as their collaboration with Alltech E-CO₂, that British producers are finding new and innovative ways to drive sustainable growth.

The third year of the Enviro-Map programme has again produced promising results, showing an average reduction across the majority of the species involved in the project. Industry leading programmes like the Co-op Enviro-Map prove that by engaging UK producers it can lead to best practice on farm whilst measuring, managing and reducing greenhouse gas emissions.

The general public is now more educated in many of the positive efforts made by UK farmers, but it is still pertinent that we improve the productivity of British agriculture in a way that protects the environment over the long term. There continues to be a huge opportunity for farmers to collectively improve their farm efficiency, sustainability and profitability. Our ability to innovate and drive improvements will help create more environmentally aware farming systems, delivering safe, affordable food for future generations.”

Dr. John Kazer, an agriculture expert at the Carbon Trust helped confirm farm-level measurement of impacts was in line with international best practice.

Alltech E-CO₂



The Co-op has partnered with industry experts Alltech E-CO₂ to deliver the Farming Enviro-Map programme for our Farming Groups.

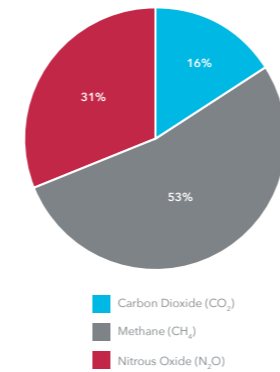
Alltech E-CO₂ have pioneered the use of on-farm environmental tools and assessments to provide opportunities to benchmark and improve on-farm efficiency, leading towards increased profitability and sustainability. From individual farms to multinational organisations, Alltech E-CO₂'s service provides a comprehensive range of advice, tools and services to help measure and improve environmental performance. Using their unique on farm approach, each assessment collects information across the entire farm business to provide a detailed benchmark report and practical advice to improve the efficiency, profitability and sustainability of your farm.

By working with the Carbon Trust to accredit their range of bespoke assessment tools, Alltech E-CO₂ ensures the products and services they provide are independently assessed and internationally verified.

The Carbon Footprint

A carbon footprint is a holistic measure of farm efficiency; with data showing that the more efficient a farming enterprise is, the lower its carbon footprint will be. The footprint itself is the total set of greenhouse gas emissions caused directly or indirectly from milk or meat production up to leaving the farm.

For example, greenhouse gas (GHG) emissions may be emitted directly from animals as methane and from the breakdown of fertiliser on pasture, or it may be emitted indirectly from the production of the feed and fertiliser inputted to the farm system. Each individual gas has a different warming potential in the atmosphere. Therefore, to generate a single footprint figure, the results are standardised from Methane, Nitrous Oxide and Carbon Dioxide, to Carbon Dioxide equivalent (CO₂e).



Average GHG breakdown for a ruminant farm

Project Overview

We work closely with our farmers and suppliers through the Farming Group programmes. By supporting UK farmers, we can boost the economies of communities across the UK and ensure the highest standards of animal welfare while keeping sustainable practices at the forefront of discussions. The Farming Groups were established to make it easier for farmers to collaborate, both with us and other farms

The seven Farming Groups that participated in each year of the Enviro-Map project were the dairy, beef, lamb, pork, broiler, turkey and laying hen groups. For Year Three, 92% of the Farming Group members completed assessments, therefore working towards the Environmental Pillar of the Co-op Farming Group pillar model.

Farms assessed



At the start of this programme the Co-op aimed to work with our producers to measure on farm emissions. By first understanding their on farm environmental sustainability, we can then help partner with our producers to drive efficiency and profitability. Using a consistent accredited model accredited by the Carbon Trust, a leading provider of carbon and sustainability advice globally, the three-year project has enabled the Co-op to successfully generate a benchmark carbon footprint for our farm production across the Co-op Farming Groups. We have also worked to provide our farmers with a platform to record biodiversity initiatives, which has helped to uncover and promote the fantastic work already taking place across the UK.

Co-op Enviro-Map assessment process



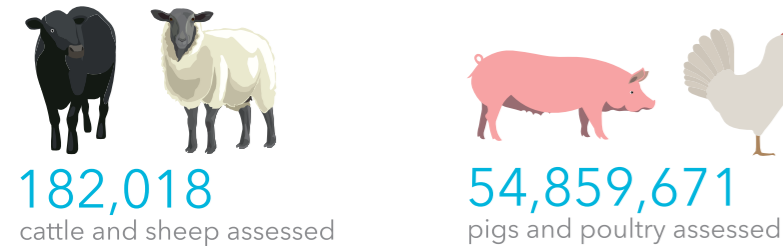
Year Three Findings

CARBON FOOTPRINT



ENTERIC EMISSIONS

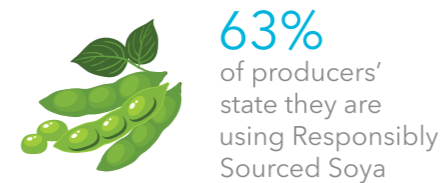
Mainly affects **ruminant species** (cattle and sheep) as they release methane from the rumen (stomach) during the **digestion of feed and forage**



45% of the footprint for cattle and sheep is allocated to enteric emissions (emissions from the rumen).

FEED USE

68% of the footprint for the pig and poultry groups is allocated to feed



MANURE AND GRAZING

Storing, managing and using farm manure generates both methane and nitrous oxide emissions

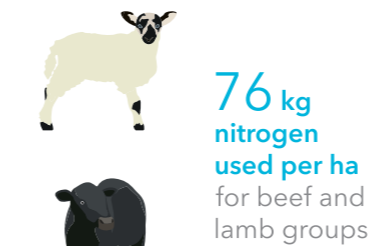


Some of which is used back on the farm to heat the poultry sheds

ARTIFICIAL FERTILISER



11,769 tonnes of fertiliser used in the ruminant groups; this helps to maintain soil fertility whilst growing feed crops



RESOURCES



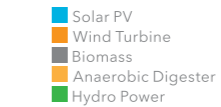
18.8 million kWh of renewable energy is produced on our supplying farms

This is the equivalent of powering **4,700 homes for a year**

Our farmers export the equivalent of **48%** of the electricity they consume

5.6 million litres of fuel used by the group

Renewable energy types generated on our farms



Fuel and electricity account for **8%** of emissions generated during farm production

WATER



Mains water use across the supplying farms is equivalent to

1,162 Olympic sized swimming pools or

53 days of the UK's water demand for making tea!

Carbon Efficiency Recommendations

Emissions from agriculture are typically derived from nitrogen losses, energy usage and reduced organic matter within soils. The areas that provide the greatest opportunity for improvement directly link to the factors that have the biggest impact on a carbon footprint, such as animal performance, feed and fertiliser. These emissions are affected by how healthy and productive the animal is, which as industry data suggests with the adoption of best practices and technologies will ultimately increase profitability and sustainability for the producer.

Feed Efficiency

Purchased feed and feed efficiency is one of the largest contributors to the carbon footprint across all species, as well as being the highest for the pig and poultry groups. This is therefore a key area that farmers can focus on to reduce their environmental impact, by ensuring the use of correct and well-tailored feed rations leading to significant carbon and cost savings. In terms of the production of feedstuffs, the main drivers for emissions can come from deforestation and land-use change, processing, cultivation and transport. By effectively utilising the following higher carbon feed ingredients, a producer can make improvements in terms of their on farm carbon footprint.

- Soya and palm products with land-use change
- Highly processed vegetable fats and oils
- Enhanced high protein straights
- Enhanced protein concentrates

Successful use of by-products, which are associated with low carbon emissions due to the fact they have previously been used for a different purpose, is also an effective way of improving feed efficiency and having a direct impact on a farm's footprint.

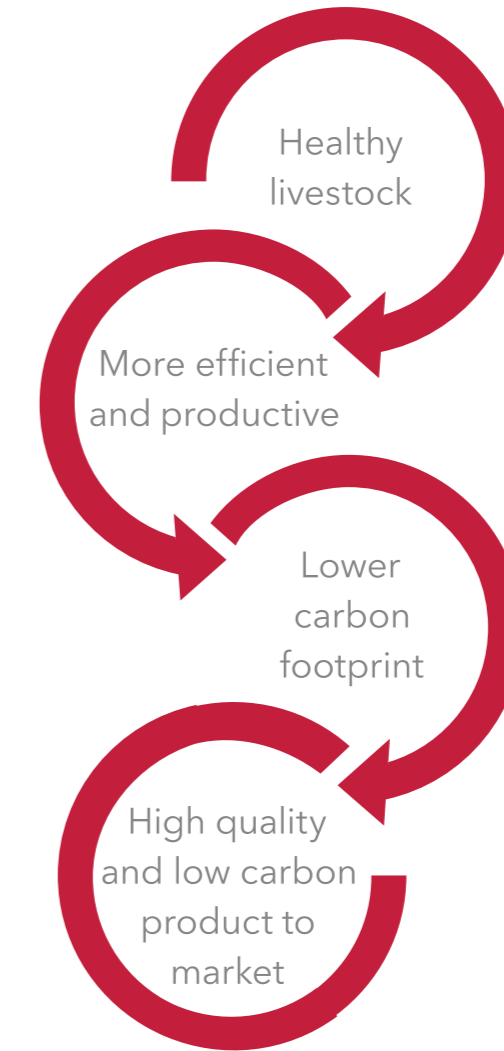
Balancing diets with the age and sex requirements of the animals helps to ensure excess protein isn't fed and wasted through manure. This contributes to the economic status of the farm, whilst reducing environmental impact.

Water consumption has been proven to improve feed conversion efficiency (converting feed to meat or milk). Ensuring stock have access to clean, fresh water at all times helps improve animal welfare and performance.

Animal Health

Animal health is critical to achieving good carbon performance through its direct effects on the performance and efficiency of a farm enterprise.

- Taking a proactive approach to health across the animal's lifecycle is crucial
- Animal's fighting disease are not optimising energy for meat and milk production
- Reproductive performance can be compromised by poor health and welfare
- Every disease case can have significant financial impacts on farm-through veterinary costs as well as reduced production
- Efficient monitoring and record keeping allows for efficient use of medical resources



Fertiliser

Fertiliser is a high carbon emitter, being associated with high emissions in both manufacture and application.

Reductions can be achieved by using organic manures, targeted application through testing soils and improved slurry application methods on grazing land.

Carbon Efficiency Recommendations

Alongside the main contributors to a footprint, there are also other areas that have a smaller environmental impact. Improving on these areas may not have a large direct effect on farm emissions, however, they can provide simple financial benefits to a farm business

Fuel



Fuel and gas usage contributes to an average of close to 6% of the Co-op Farming Group's emissions breakdown. However, by making improvements in fuel use and efficiency, whether that be through reasons such as well maintained machinery or more precision application and usage of resources, farmers stand to make financial gains. Based on an average red diesel price of 64.66 ppl, for a broiler farm a 10 litre saving per 10,000 birds for a flock of 100,000, would equal a saving of **£646.60/ year**. This figure may be achievable for certain farmers, however, any potential savings all add up to increased profitability.

Electric

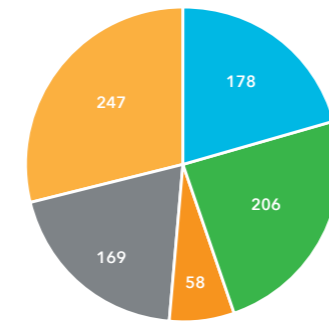


Grid electricity can be a large drain on finances depending on location and system. Highly intensive systems or geographic regions with less favourable renewable energy conditions can end up using far more grid energy than their peers. In Year Three, The Co-op Beef Group produced a total of **1,800,727 kWh** of renewable energy at an average of **13,642 kWh** per farm. Based on an average kWh unit price of 13p, a reduction of 20kWh of grid electricity per head for a herd of 100 would equate to a financial saving of £260/year.

Biodiversity

Alongside the carbon footprint measurement and management of our Farming Groups, over the three years of the Enviro-Map programme we have also provided our farmers with a platform to record biodiversity initiatives. This has helped to uncover and promote the fantastic work that has already taken place on farm. In Year Three, 110 producers actively engaged in agri-environmental schemes, with many more managing a diverse range of habitats.

852 hectares of woodland is grown across our farming groups encouraging a variety of flora and fauna on their land.



■ Native
■ Broadleaved
■ Ancient
■ Coniferous
■ Other

Our producers manage **192 hectares** of watercourses and wetland. This provides habitats for species such as Crested newts, Skylarks, and Lapwings, all of which are monitored on the farms.



Our farmers also continue to encourage wildlife on farm with over

141 installing devices and providing habitats including bird boxes and feeders, butterfly meadows, beetle boxes, wild bird plots, bat boxes and fish habitats.

Amazingly, our producers maintain

598 hectares of wildflower meadows on the supplying farms; this is equivalent to **717 full size football pitches!**



They also manage **1,458 km** of hedgerows across all of the groups. **This is equivalent to the distance between the Co-op's Manchester HQ and Madrid.**



Summary

Over the three years of the Enviro-Map project we have successfully generated a benchmark carbon footprint figure for farm production across our seven main farming groups. We are pleased to reveal that each group falls slightly below the national averages for UK agricultural production*.

Over the assessment period, there has been huge climate variability which has had an impact on animal health, performance and feed availability for many producers. This was further coupled with a level of uncertainty due to the national political situation, which has led to increased variability in a number of performance indicators.

As ever, it is important to understand that farmers are working with biological systems, whereby conditions can change frequently. As noted these can include disease outbreaks, climate fluctuations, and market conditions or geopolitical pressures which can have huge impacts on agriculture. Scenarios such as these mean that it is even more important to continually measure environmental impact year-on-year to be able to identify which increases or decreases in emissions are due to efficiency or environment.

Additionally, when reporting agricultural emissions it is important to understand that producers operate within a holistic cycle of investment, whereby emissions may increase in one instance based upon business decisions that must be taken due to market variability. These decisions may also ultimately lead to financial and sustainability benefits in future.

In line with the Co-op's commitment to reduce supply chain emissions by 11%, to date the Enviro-Map project has shown average reductions across the majority of our Farming Groups.

SPECIES	YEAR 1	YEAR 2	YEAR 3	
Dairy	1210	1186	1176	g CO ₂ e/litre
Beef	11.17	10.66	10.44	kg CO ₂ e/ kg LW
Lamb	11.15	11.21	10.49	kg CO ₂ e/ kg LW
Pork	2.63	3.25	3.72	kg CO ₂ e/ kg LW
Broilers	2.29	2.31	2.24	kg CO ₂ e/ kg LW
Turkeys	3.95	4	3.55	kg CO ₂ e/ kg LW
Layers	2.27	..**	1.76	kg CO ₂ e/ dozen eggs

This total emissions reduction between Year One and Year Three of the Co-op Enviro-Map project for all species equates to 124,591 tonnes of CO₂e.

This is the equivalent of:



15721
fewer flights
round the world



56399
cars off the
road for a year



75464
houses worth
of electricity use



44656
tonnes of
recycled waste
instead of landfill

We would like to thank our farmers for their engagement with the Enviro-Map project. The Co-op will continue to work with our producers on exciting projects to ensure they are both profitable, and sustainable.

*where averages are available ** Due to the average laying period length, layer carbon footprints exceed a one-year time period.

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