Carbon Reporting for GRASSROOTS ® Beef.

How the Food and Hospitality Sector can Baseline, Reduce and Report Scope 3 Emissions for Beef.

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CHANGING THE LANDSCAPE OF FARMING

Contents

Introduction

Forward thinking companies are already taking action to baseline, report and reduce their Scope 3 emissions. This is driven by the evolving reporting landscape, as well as reputational and brand considerations.

Beef and lamb is the major contributor to Scope 3 Emissions on the menus of most hospitality and food brands. And yet, their ability to interrogate the truth behind these numbers is very limited.

Until now, trying to trace beef back through the supply chain to individual farms has been challenging, if not impossible. For those able to go direct to farms, it has meant compromising on consistency, quality and customer service.

However, traceably sourcing meat back to farms is critical because each farming system is associated with vastly different environmental and carbon footprints.

In this report, we outline how the farming system adopted by our *Certified Grassroots Regenerative* farms leads to lower emissions. We compare the footprint of our beef with UK benchmarks, as well as explaining how it's calculated and audited.

In all, we hope this report demonstrates a way forward to those brands grappling with how to manage the Scope 3 Emissions of their red meat.

Alastair Trickett
Founder, Grassroots Farming

Key Findings

We are obsessed with data. Right from the start we've wanted to back up claims. Whether that's about outcomes like carbon and biodiversity, or about actions like the practices being adopted by our farmers across the supply base, and over what land areas.

That's why I was reassured to see findings from the independent Supply Chain Carbon Footprint Analysis of GRASSROOTS which was recently completed by the Farm Carbon Toolkit.

It shows **net emissions of 17.27 kg/CO2e** per kilogram of deadweight beef. Which means every kilogram we supply our customers reduces their emissions by 52% compared to the UK average.

Compare this to the cost of buying offsets in the market today and that's a saving of £1.50, or a forecast saving of £4.50 by 2030.

Moreover, the report highlights the variability between farms, which gives us the opportunity to learn and be led by the best. We're already proud to count three *Farmers Weekly Beef Farmer of the Year* winners as *GRASSROOTS Regenerative Certified* farmers, supplying our customers.

The shifting scientific consensus over methane accounting highlights further opportunities. Our farming system, underpinned by our *standards* and *certification,* ensures farmers are already minimising high carbon inputs. The only way is up. Or down, depending on how you look at it!

James Evans
Founder, Grassroots Farming

Comparison to UK Averages

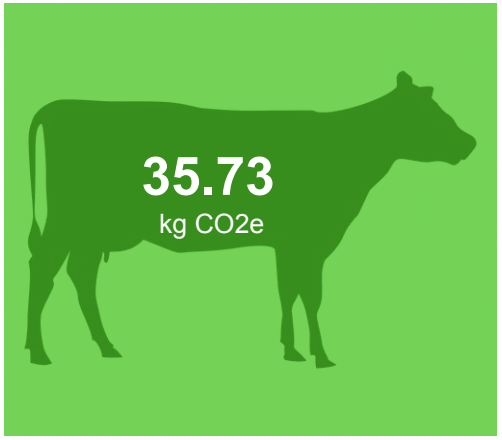
Sourcing from the GRASSROOTS supply chain more than halves the carbon footprint of beef, when analysed on deadweight kilograms produced on farm.

We would expect the emissions to be even lower in a full life-cycle analysis. This is due to GRASSROOTS beef being bred from dairy cows, which offers substantial reductions in beef carbon footprint because the cows produce both milk and a beef calf.

The carbon footprint drops to 15.73 kg/CO2e net emissions if sequestration from trees, hedgerows and soil is factored in.

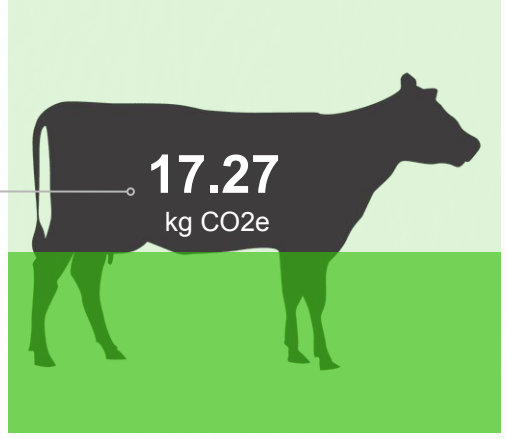
With data from over 1,000 processed cattle, and over 4,000 cattle on our farms at any one time, we're able to achieve incredible consistency from our farming systems.

Average UK Suckler Beef [1]



GRASSROOTS® Beef

GRASSROOTS beef is **52% lower carbon footprint** than average UK beef.



1 Centre for Innovation in Livestock. Net Zero Livestock. How Farmers Can Reduce Emissions. April 2022. p30.

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The Role of Regenerative Farming

GRASSROOTS farms adopt a regenerative farming system underpinned by our *farming standards*. These encourage practices like mob-grazing, reduction in artificial fertiliser and fossil fuel usage.

Our standards target both improving the efficiency of inputs and promoting practices shown to increase carbon storage in the farmed landscape, such as increasing plant diversity and minimising soil disturbance.

We take a balanced and scientific approach to farming commercially, improving animal welfare and maximising the benefit we can have on the environment.

For example with growth rates, lowering the age of slaughter from 21 months to 18 months has been shown to reduce the carbon footprint per kg of beef by 12%.

1 Centre for Innovation in Livestock. Net Zero Livestock. How Farmers Can Reduce Emissions. April 2022. p30.

Contributions to emissions.

These graphs show a sample collection of GRASSROOTS farms to dive into the beef carbon footprint in more detail.

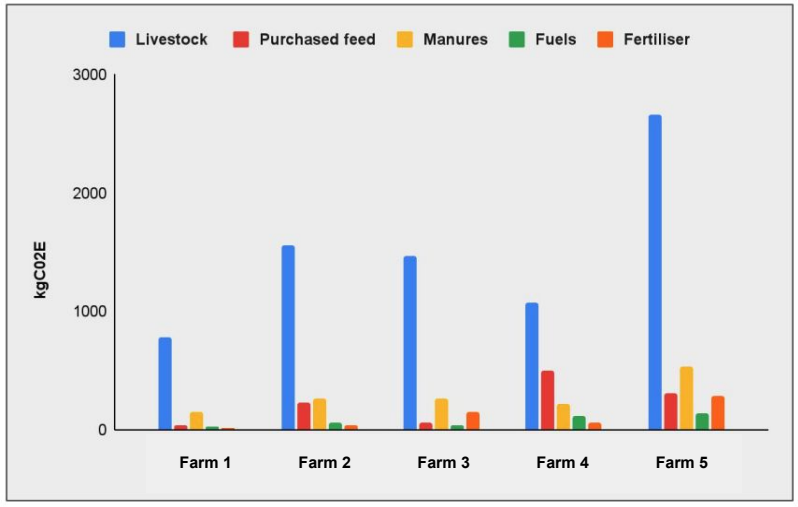
They highlight the vast majority of emissions come from the cattle themselves, namely the methane (CH4) produced.

They also show the very low footprint accruing to bought in inputs, whilst at the same time demonstrating variability between farms. This highlights an opportunity already being acted upon, to share lessons learned between GRASSROOTS certified farmers to improve their systems, and reduce emissions.

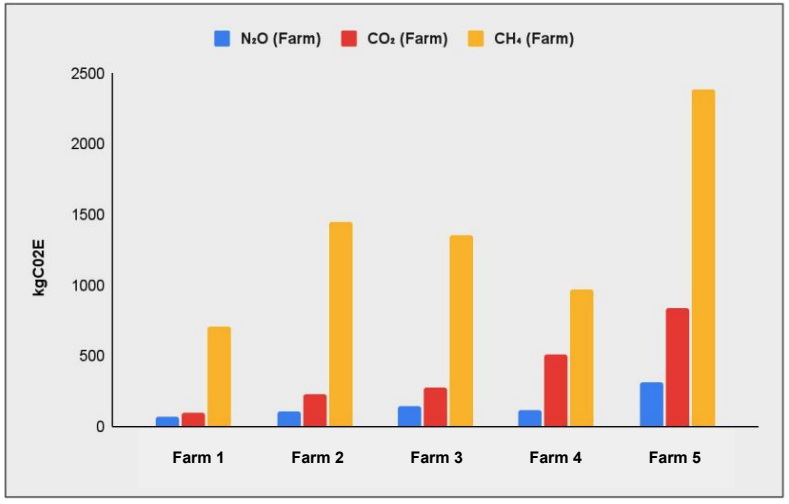
The benefit of having the majority of emissions from methane is a management opportunity to naturally increase growth rates, to explore genetics that reduce methane production, as well as new technology such as feed inclusions or boluses.

It should be noted that the shifting scientific consensus towards the warming effect of methane lasting only 10 years, also dramatically reduces the carbon footprint of Grassroots farms by 70%.

Emissions by category.



Emissions by greenhouse gas.



Understanding methane.

There is a growing consensus among climate scientists that the current way of measuring methane emissions from ruminant livestock systems could be overestimating the impact of methane on global warming potential.

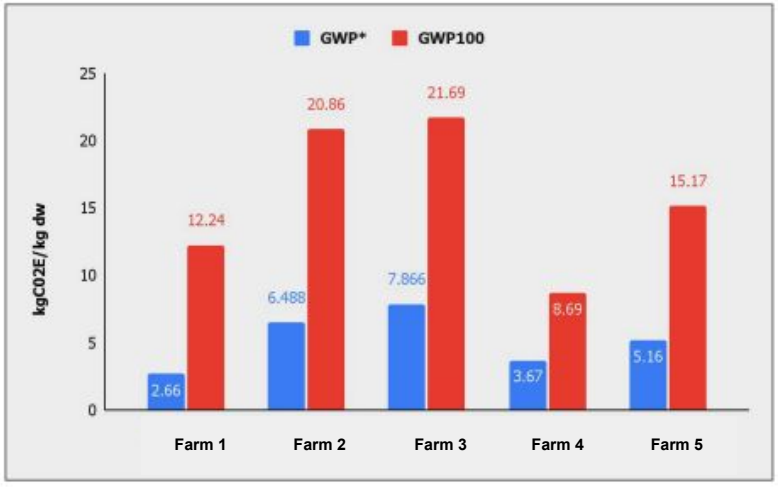
The debate has arisen due to the current units which estimate the impact of the gases over 100 years. This metric works well for Carbon Dioxide and Nitrous Oxide, as once this gas is released into the atmosphere it remains there at the same concentration until it is removed.

Methane, however, is classified as a short lived climate pollutant; as such it behaves differently to carbon dioxide and nitrous oxide.

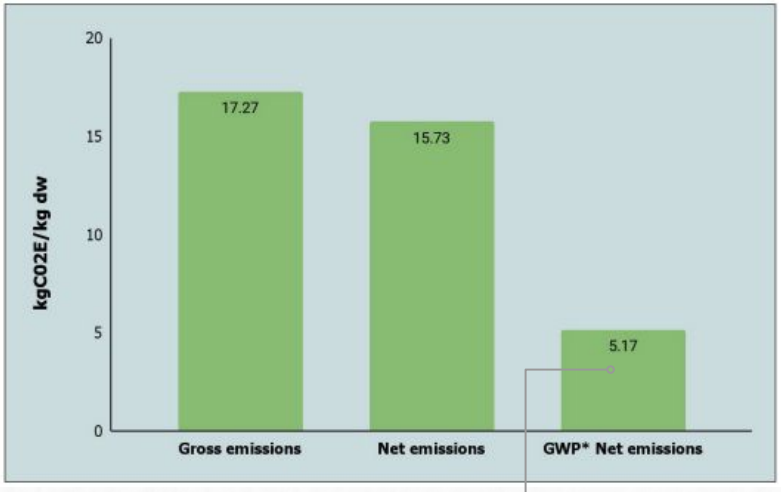
Once methane is released it has an initial pulse where it has a significant warming impact, however after between 9 and 12 years this warming impact is reduced as the gas breaks down and is reabsorbed back into the environment.

This work has been pioneered by academics and scientists at Oxford University, including Professor Myles Allen and Dr Michelle Cain and has led to the development of a new metric for assessing methane, GWP*.

Emissions with GWP* vs GWP100.



Total Supply Chain Emissions.



5.17kg
C02e / kg beef
using GWP*

1 Improved Calculation of Warming-Equivalent Emissions for Short-Lived Climate Pollutants. 29 (2019). Cain, Lynch, Allen.

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Driving change in your business.

We're proud to have worked with national restaurant groups, pub chains, ready-meal companies and fashion brands.

The starting point is three-fold. Firstly, understanding what regenerative farming really is, including a visit to one of our farms.

Secondly, understanding the drivers for change within your business and existing suppliers, including key stakeholders.

Thirdly, unpicking the barriers to change manifested from your current utilisation of beef. This enables us to trace alternative models back to farm, including different carcass utilisation models.

We believe most brands designed their menus and supply chains before sustainability became the burning issue it is today. So in most cases, some reverse-engineering is required. Fortunately, if you have the will, we've developed the way.

About us.

GRASSROOTS was started with two aims. Firstly, to provide farmers with support transitioning to regenerative farming, by connecting them to their customer with fairer terms. And secondly, to provide brands with serious ambitions around regenerative farming with a link to a network of farms.

We have established a community of farms who supply us beef, which we supply our customers on their behalf. But what makes us different to going direct to a farm?

Well, for the farmer, supplying GRASSROOTS is no different to supplying any existing large customer or abattoir before we came along. We turn up and collect a full load of animals and pay them within 10 days. In other words, they get access to a direct value-add market without having to become sales, marketing and logistics experts. They can just keep on farming

For our customers, we offer a level of assurance through our independently audited certification scheme, *GRASSROOTS Regenerative Certified.* This comes hand-in-hand with independent carbon and biodiversity audits.

Furthermore, because we operate at scale across the country, we're able to meet the quantity, quality, consistency and customer service expectations of large contracts year round.

It's taken the amazing support and vision of our customers to help us become the supply chain we are. And we're excited for the future, being well placed to drive the change to environmentally friendly beef.

James Daniel
Founder, Grassroots Farming


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