



TECHNICAL NOTE 5: ON-FARM GREENHOUSE
Thursday 23rd October, Myerscough College,
Lancashire



What are on farm greenhouse gas emissions?

Daily operations which happen on any farm use inputs (such as feed or fertiliser) and create outputs (such as livestock waste or arable crops). All these operations result in the production of emissions which are nitrous oxide (N₂O), methane (CH₄) and carbon dioxide (CO₂).

56% of UK agricultural emissions are due to N₂O, 35% are due to methane, and about 8% are due to CO₂.

Key facts highlighting the importance of on farm greenhouse gas emissions:

- 80% of emissions throughout the total supply chain are sourced (generated) on farm.
- The Food and Agriculture Organisation (FAO) has stated that in the next 50 years the world must produce more food than in the last 10,000 years.
- Worldwide we are using resources 50% faster than the planet can sustain

Why calculate a farm greenhouse gas emissions footprint?

For individual farmers, there could be three drivers of why you would want to look at emissions at farm level:

1. To **measure** and **monitor** current farm performance and understand how improvements can reduce environmental impact
2. To **add value** to the business and use the 'green angle' as a unique selling point for your products; and
3. To **identify practical actions** that can make the farm enterprise more resilient, more efficient and more profitable.

Increasingly it is the supply chain, particularly retailers and a number of dairy processors who have been driving farmers to record this information. It is expected to become a greater priority across all agricultural sub sectors.

Signposting – Further Information...

For further help about agricultural greenhouse gas emissions please have a look at:

- ❖ Farming Futures is a valuable resource containing a vast amount of information on environmental and sustainability issues impacting in agriculture. The link references to fact sheet material on greenhouse gas emissions but the blog entries also provide useful firsthand experience and opinions on climate change and agriculture's role to reduce emissions.
- ❖ The Agricultural Greenhouse Gas Inventory Platform (<http://www.ghgplatform.org.uk/>) is useful point for the latest research and development in respect to UK greenhouse gas emissions from agriculture.

Selecting the right tool to calculate greenhouse gas emissions

There are a wide range of online calculators available to farmers and farm advisers which can help you generate the results you need. However, before selecting an online tool, it is important you ask yourself 5 simple questions

1. How easy is the online system to use?
2. What are you trying to achieve? How the results will be used will have a stronger determination on what system you select, particularly if you want to use the results to market products.
3. Simplicity vs. Accuracy? Simple, quick and dirty is always a good entry point, but don't expect it to give the most accurate results for your farm.
4. Do you have available data? Some systems can take up to 3 hours to complete if you don't have the expertise but more critically, the data to hand. Make sure you know what information you need before you sit down at the computer.
5. Can you understand the results? There is no point doing this if you don't understand the results it is presenting to you.

Tools Assessment

As there are a wide variety of online tools and calculators available to farmers and farm advisers, it can make it a difficult decision to decide which is the best freely available tool on the market. During the technical event a practical session involving three online tools was completed. These were Carbon Accounting for Land Managers (CALM), the Cool Farm Tool, and the E-CO₂ 'What-If?' Tool.

	Format	Availability	Purpose	Ease of Use
CALM	Web based calculator	Free (www.cla.org.uk/Policy_Work/CALM_Calculator)	A good first entry into carbon emissions for farm/land businesses. Produces a carbon balance and does identify practical steps to reduce emissions.	Simple, quick, use of drop down menus and has a step by step approach.
COOL FARM TOOL	Web based calculator	Free (www.coolfarmtool.org/CoolFarmTool)	Designed to measure the carbon footprint of a crop and livestock product. Used and adopted by a growing number of multinational corporations. Applies an LCA approach.	Useful drop down menus but need farm information to hand and has limitations on feed options for livestock systems.
'WHAT-IF' Tool	Web based calculator	Free (https://mcdonalds.eco2project.com/Beef/)	Designed for use by farmers to give an understanding of the carbon footprint of their enterprise and the costs/benefits attributed to current and potential management practices	Very simple but need farm management data to hand

The feedback gained from participants on the technical event identified a number of interesting points to note in terms of which system an adviser might select to use with a farmer:

- Data needs to be available to hand and must be broken down into the various categories relevant to how the farm is structured e.g. feed data, herd/flock data, energy, fuel and so on.
- Simplicity and ease of use are fundamental – if a farmer needs a product based result, the recommendation was they need technical support of an adviser.
- Quality and presentation of the results is important and must enable comparability and benchmarking over time.

Case study: McDonald's Sustainable Beef

Chris Davies, Environmental Consultant with E-CO₂, an industry leading agricultural consultancy specialising in carbon and sustainability assessment, gave an insightful presentation into the reasons why farmers should be looking at greenhouse gas emissions as well as providing three detailed case studies on supply chain activities E-CO₂ are currently engaged in. These were projects for Arla Foods, McDonald's and Alltech.

One of the case studies concerned the support provided to McDonald's to assist in the establishment of a sustainable beef supply chain. This is collaboration between McDonald's and its UK and Ireland abattoir suppliers. Seven abattoirs are involved and annual carbon footprinting assessments are completed using a full lifecycle analysis model. Farmers receive a full report following the assessment as well as a bi-annual newsletter with case study material.

However, in order to drive improvements at farm level and support the supply group, meetings are coordinated across the UK and Ireland. Two meetings per abattoir are coordinated annually and are tailored to key issues which can enable farmers to make improvements benefiting the farmer's profitability, the McDonald's environmental footprint and the consumer.



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