



We recognise it's not perfect...

During the process of creating and updating the Farm Carbon Calculator we think it's important to acknowledge that there are certain areas that we would like to improve on in due course. Here we list those issues and why we haven't included them in version 3.0.

1. Subjects with not enough or conflicting scientific data to rely on with any degree of certainty.
 - **Hedgerow heights and different management regimes.**

We believe this is a very important area of work and would like to more fully understand the interaction of different management methods, species and sizes of hedgerows.
 - **Soil Organic Matter**

Figures for levels of carbon sequestration that occur in pasture or crop land soil organic matter have very wide ranges in published literature. We didn't feel comfortable in offering general figures, instead opting for accurate soil organic matter tests provided by users.
 - **Travel for people**

Getting people to your farm, whether they're employees, vets or consultants all create carbon emissions and indeed can be significant. We decided not to include these options at present however because we have not made a firm decision on how to scope out these issues – i.e. what to include and what not to. It's important to take decisions that are measured and consistent.
 - **Electrical items**

Manufacture and distribution of electrical items create significant emissions and we would encourage people to buy quality and keep those machines going for as long as possible. Whether it's a printer, TV or washing machine, most farms buy electrical items. However reliable figures on emissions for these items are hard to come by.
 - **Buildings**

We would like to have a function to work out the emissions created from new farm buildings. This is however quite complicated and needs more work. Use of steel and concrete creates high emissions and these should be captured.
 - **Anaerobic Digestion**

Use of anaerobic digestors is increasing and we would like to reflect that in the

Calculator. However figures on emissions from AD plants have not been, as yet, adequately researched.

- **Handling of slurry**

We recognise there are different management systems for slurry, including various forms of aeration and covering. However figures on differences in emissions are not yet available.

- **Comparison of different breeds of livestock**

Livestock breeds can make a huge difference to the size and characteristics of an animal of the same species – for instance Jersey versus Holstein Freisan cows. As yet figures detailing the differences in emissions between breeds are not forthcoming. We have included a correction factor for dairy cows, measured by annual milk yield.

- **Contractors**

At present the embedded emissions of contractor's equipment and overheads of running their business are not included due to the complexity of working that out. Ideally a tool would be available which would be able to work out contractor's total emissions from any given operation.

- **Compound livestock feeds**

Use of these feeds is very high, particularly in dairy, poultry and pigs sectors. Having a given figure of x tonnes of CO₂e per tonne of product is the ideal solution; however this has proved very difficult to calculate. Published emissions figures are not available on some feed constituent parts. The actual amounts of feed constituents are not always made available to the user, making accurate calculation of emissions difficult.

- **Agrochemical surfactants and anti-foam agents**

Insufficient data exists to support emissions figures.

- **Workshop**

In the workshop potentially a lot of parts, materials and consumables are used, from replacement of parts to tools to rubber gloves. There is not much information to support the emissions figures from quite complex manufactured items

- **Specific fertiliser emissions**

There are many factors that affect the GHG emissions from artificial fertilisers, including soil moisture, temperature, structure and pH. However working out how these factors interact with specific fertilisers in specific circumstances is very complex. We will work on a user-interface that achieves a satisfactory balance of usability and accuracy.

2. Usability issues – where inclusion would be too onerous for users

- **Crop management**

The exact climatic and soil conditions when fertility inputs (organic or non-organic) are applied can make significant differences in emissions of nitrous oxide in particular. However recording the natural conditions for every input to every crop through the year would be excessively onerous for most users.

- **Soil Organic Matter (SOM) sampling errors**

SOM is a huge store of carbon in soils – losing SOM means CO₂ is oxidised and gaining it means CO₂ is locked in the soil. Therefore changes in SOM are important, and can make huge differences to carbon emitted or sequestered. We recognise that there is potential for sampling errors by users, but have produced guidelines in taking SOM samples in an attempt to standardise procedures.

- **Results per tonne of product**

It would be useful for users and farmers to understand the carbon emissions associated with every tonne of product from their farm. This is of course easy if the farm produces just one product, for example wheat. It gets progressively more complicated to determine when there are several products, especially when different types – e.g. wheat, milk, beef and carrots. Attributing emissions to each product type fairly is very complicated and we have come across no robust methods for doing so.

3. Other issues

- **Distribution by air, rail and sea**

We surmised that most users of the Farm Carbon Calculator would not be exporting their products outside the UK, and even if they did so it would be to Ireland or Europe, which would probably be by road. Distribution emissions by air, rail or sea may be included in future versions.

On every issue we are committed to making improvements over time and will update the Calculator in due course. If you have suggestions or comments please do not hesitate to contact us.