



Carbon Calculator version 4, released Feb 2018

Since the previous version we have made a number of changes that have made the Calculator up to date, more relevant and improved user friendliness. This is a description of those changes.

Factors

Every emissions and sequestration factor has been checked. About 50% have been updated to reflect the latest scientific research and guidance. The other 50% remain the most up to date figures available.

The updated factors include:

- All fuels (capturing all supply chain emissions)
- Agrochemicals
- Livestock (nearly all)
- Waste
- Distribution
- Hedges

Calculations

Behind our Calculator lies a complex series of equations that turn your data in to your carbon footprint. Every calculation has been double checked and then tested too.

New options

Every version we try to expand the scope of the Calculator to capture as many processes and products as possible. The new options we have this time include:

- Livestock feed – some new options
- Electricity – option for renewable energy mix in your tariff

- Laying of concrete road
- Recycled steel use
- Grassland area
- Woodland – broadleaf, coniferous (average)
- Hedges – ‘large growth’
- Green waste compost
- AD digestate

Significant changes

As well as the new options, listed above, some of the existing options have been changed significantly, as listed below:

- Recycling figures altered significantly (as guided by Government figures)
- Compost now reflects all GHGs emitted, not just energy in processing
- Fertilisers – now per tonne of active ingredient (e.g. N or P)
- More logical units in Materials and Capital items
- Capturing more farm information
- Peat Soils emissions have been downgraded due to change in scientific thinking

Areas not covered

Just for clarity we do not include the following, and will work to include what we can in future versions. The reason for lack of inclusion is usually because there is not enough and/or good quality information to underpin the factors.

- **Anaerobic digestion**
- **Changes in land management** (e.g. woodland to arable). Assumption is that very little negative impacts are happening; in any case grass to arable (for instance) the changes would be picked up in SOM changes (if measured).
- **Biochar** application
- **Composting on farm** (for own use); though green waste compost figures are indicative
- **Manure emissions** (bought in); if own manure then it’s covered on Livestock page
- **Blended animal feeds** – because the mix is often very specific and each needs working out. Also the origin of identical ingredients have very different impacts – e.g. UK soya v Brazilian on former rainforest land
- **Soil Organic Matter in grassland** - figures for levels of carbon sequestration that occur in pasture or crop land soil organic matter have very wide ranges in

published literature. We don'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.
- **Livestock breeds** - comparison of emissions from different breeds, although there is a correction factor milk yield per cow
- **Contractors** - embedded emissions from contractors' equipment
- **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.
- **Benchmarking** – as yet you cannot compare your data to 'average' figures across different farms. However we are hoping to get to this point in the future when we gather more data from users.

On all these issues we are committed to widening the scope, improving the user experience and improving where we can.

Written by Jonathan Smith
Farm Carbon Calculator manager

Feb 2018