Farm Carbon Calculator

What's new?

April Upgrade 2024

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Methodology version 3.0

Data collection spreadsheet version 1.6.0

Calculation Engine API version 1.1.1

Farm Carbon Calculator

We provide upgrades to the Farm Carbon Calculator on a regular basis, to ensure that we are reflecting the most recent science, and giving users the best experience.

Our latest upgrade showcases a raft of changes that will give our users more functionality and more accurate carbon reports.

Here we layout all the changes that have been made, and what you can expect in this latest version, from April 2024.

Table of Contents

Farm Carbon Calculator

1. Summary

- Emissions factors updated in line with **latest UK GHG inventory** 1990-2021 [92a, b, c] and 2023 UK GHG conversion factors [85, 86], as well as **new fuel and waste disposal** options being added from these sources
- Further updates to livestock and cropping emissions factors in line with **refinements to IPCC chapter 11** [96]
- Addition of options to estimate emissions from **adjuvants, liquid fertilisers, amino acid amendments, recycled packaging, on-farm materials** such as buckets, jute bale twine, and tractor parts.
- Expansion of options to add **fencing materials** and **complete fencing** by metre (expanded selection)
- Options to capture information on usage of fertilisers and pesticides when the emissions factor is unknown or the branded product is **not available in our list** (e.g. "fertiliser containing N - not listed", "Liquid herbicide - not listed" etc.).
- Option to enter the usage of electricity from a **non-UK electricity grid** (if you are using the Farm Carbon Calculator abroad, you can look up the national conversion factor in your national inventory and enter this with your usage to get more accurate emissions data).
- You can now account for **Inventory items** in either the existing way ("spread" across 10 years) or "upfront". You can switch between these methods without losing the data you have entered. The "upfront" accounting approach is compliant with the GHG protocol agricultural guidance on the inclusion of capital items (Inventory). Not all standards require inclusion of capital items (so if you are producing a report for someone else, check whether they want capital items included).
- You can now account for **waste disposal** in the same way as the UK GHG inventory. You need to select this at the start of your report (or use the "Edit farm details" button). "Waste" is the existing approach which compares emissions from disposing of wastes to what would have been emitted had the waste been sent to landfill (i.e. it includes "avoided emissions"). **The new option is recommended** and is compliant with the GHG protocol agricultural guidance - it discounts any "avoided emissions" and accounts just for the emissions resulting from the disposal method selected.

Farm Carbon Calculator

2. Updated emissions factors for reports ending after 01/04/2024

These items in the Calculator have been updated in line with updates to reference databases and/or in response to newly available scientific literature, of various Greenhouse Gas emissions factors.

Line-by-line referencing for all items can be found in the 2024 data collection spreadsheet.

Table 1. Items with updated GHG emissions factors for v1.6.0 (April 2024)

Items	Previous reference	Updated reference	Notes
Fuels			
Liquid fuels Solid fuels Gas fuels Cars & vans Contractor operations Hotel stays Public transport	64	86	Factors updated in line with 2023 updates to UK GHG conversion factors
Computers	15	91	Factors updated in line with the Carbon Catalogue factors
Materials			
Any plastics (i.e. LDPE, PP, etc.) including in structures (i.e. polytunnels)	2	86	Factors updated in line with 2023 updates to UK GHG conversion factors
Mains water Mains sewage treatment	64	86	Factors updated in line with 2023 updates to UK GHG conversion factors
Inventory			
Cars	15	91	Factors updated in line with the Carbon Catalogue factors
Fertility & Cropping (Crops)			
Agricultural crops Horticultural crops Green manures Seed Potatoes (generic)	52 & 59	92b & 94	Factors updated in line with refined IPCC guidelines (2023) and updated UK GHG conversion factors .

Farm Carbon Calculator

Items	Previous reference	Updated reference	Notes
Imported organic fertility	50, 51, 52, & 60	51, 94, & 96	Factors updated in line with refined IPCC guidelines (2023) and latest version of RB209 (2023)
Straw	18	17	Factors standardised across the calculator
Lime	3	3 & 92c	Added the emissions associated with spreading
Phosphoric acid Sulfuric acid	73 & 74	95	Factors standardised to one source
Potassium sulfate	54	90	Factor updated with more recent factor
Inputs			
Fertilisers (Average) Fertilisers (Specific) Fertilisers (Custom blend)	41, 47, 48 &49	48, 49 & 94	Factors updated in line with refined IPCC guidelines (2023)
Livestock			
Emissions from livestock (enteric and manure emissions)	53, 65 & 66	92, 93 & 94	Factors updated in line with UK GHG inventory 1990-2021
Bedding (straw)	18	17	Factors standardised across the calculator
Distribution			
Contracted road deliveries Road deliveries Air freight Rail freight Sea freight	64	86	Factors updated in line with 2023 updates to UK GHG conversion factors
Land use (sequestration)			
Woodland	10	58	Factors updated in line with 2021 Woodland Carbon Code

Farm Carbon Calculator

Items	Previous reference	Updated reference	Notes
Hedgerows (un/managed)	19	25, 22, 99, 100 & 101	Factors updated in line with refined calculations from multiple sources
Processing			
Packaging	2 & 2a	86	Factors updated in line with 2023 updates to UK GHG conversion factors
Mains water Mains waste water	64	86	Factors updated in line with 2023 updates to UK GHG conversion factors

Farm Carbon Calculator

3. New emissions factors for reports ending after 01/04/2024

In addition to the updated factors, these items in the Calculator are new or re-organised, offering users an increase in the range of inputs and processes to the business.

New emissions factors are marked with a ⭐ in the 2024 data collection spreadsheet.

Table 2. Items added, or terms changed, for v1.6.0 (April 2024)

Items	Ref	Notes
Fuels		
Non-forecourt petrol and diesel options	86	
Fuel oil	86	
Aviation fuels	86	
"100% renewable tariff" and "tariff with known carbon footprint"	86	Replace custom % renewable tariff
LPG by kWh and by volume	86	
Heat & Steam (district and on-site options)	86	
Lime spreading as a contractor operation	37 and 86	
Materials		
Concrete road by volume	2a	
Stone options expanded	2	Sandstone, marble and shale
Recycled lead and recycled copper pipe	2a	
Fencing materials (options extended)	2a	Barbed wire, high-tensile wire, stock netting, horse netting, fencing staples, rabbit/ chicken wire netting
Complete fencing by metre (options extended)	2a	Stock fencing, deer fencing and vineyard trellising
Pipes	86	More diameters added
Cardboard boxes/punnets (per box)	86	
Bale wrap by number of bales	86	

Farm Carbon Calculator

Items	Ref	Notes
Jute bale twine	86	
Tractor parts	2a	Based on weight of steel parts
Buckets (steel and plastic)	2 & 86	For a standard 12L bucket size
Workwear (clothes & rags)	86	
Paper and cardboard (options extended)	86 & 91	Includes paper cups, board and paper from both virgin and recycled stock
Roof sheets by area	2	
Reused/ repurposed rubber tyres	86	
Paper cups	91	
Inventory		
Various agricultural building options	2, 2a & 97	
Crops & Fertility		
Flax & Wholecrops	92b & 94	
Imported organic fertility options expanded	51, 94, & 96	Horse, duck, sheep and goat manure as FYM. Poultry manure with various DM%. Separated AD digestate components
Inputs		
Specific fertilisers (various) both solid and liquid.	48, 49 & 94	Footprints provided by Origin and application emissions calculated. Others derived from components.
Sprays both generic and specific: • Over 300 sprays included • Options for unlisted sprays added • Sprouting Suppressants	40	Active ingredient contents sourced from the UK Pesticides register (accessed on 23/02/2023).
Adjuvants specific and generic added	18 & 86	Based on the emissions factor of the main active ingredient
Livestock		

Farm Carbon Calculator

Items	Ref	Notes
Hay and Haylage	17	Based on the dry matter and emissions factor for silage
Amino Acids (various)	91	
Paper bedding	2	
Distribution		
EV van options for contracted and self owned vehicles	86	
Air freight options extended	86	Long haul, Short haul, domestic and international.
Land use (Sequestration)		
Managed hedgerows options for hedges greater or younger than 15 years	87, 88, 89	Only for managed hedges
Options for Peat soils based on SOC extended	21	
Processing		
Distillers spirits neutral grain alcohol	18 & 86	Based on the emissions to produce Gin neutral grain spirit
Options for recycled packaging provided	86	
Wine bottles by the bottle factor provided	71	Previously by weight only.

Farm Carbon Calculator

4. Improved user features and guidance

Some other improvements have been included for Calculator v1.6.0.

Table 3. Other recent improvements to the Farm Carbon Calculator

Section	Feature	Notes
Inventory	Upfront accounting for capital items (Inventory).	It is now possible to include all embedded emissions for capital items in the year they were purchased (**"upfront"**), in line with GHG protocol agricultural guidance. Select this option when setting up your report or go to "Edit report details".
Waste and waste disposal	**Waste** emissions factors show the net emissions when compared with disposal to landfill (i.e. they include "avoided emissions"). **Waste disposal** emissions factors come from the UK government GHG inventory.	It is now possible to include waste disposal emissions (gross emissions) based on UK GHG conversion factors (rather than in comparison to emissions from landfill). For GHG protocol, SBTi FLAG or (draft) LSRG alignment, select this option when setting up your report or go to "Edit report details", to select "**waste disposal"**.
Benchmarking	New dataset and interactive charts in October 2023.	Compare your farm against everyone who has completed a Farm Carbon Calculator report in the past 3 years. Learn more in our blog on benchmarking.
Comparisons, scenario planning and timelines	Get more from your report.	You might have missed our September 2023 update - take a look here.
Guidance	There's lots more help and guidance available on our blog (see Notes for some examples) or email us calculator@farmcarbontoolkit.org.uk	• How to avoid 'double counting' your carbon • How to get an accurate farm carbon footprint report • The complexities of calculating livestock emissions

Farm Carbon Calculator

Section	Feature	Notes
Equine businesses	New Equine Carbon Calculator	You can now produce a carbon footprint for your equine business using the Equine Carbon Calculator. You will need to make a new account but it is free for footprinting your own business or yard.

Farm Carbon Calculator

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