Useful terminology and glossary

This document helps to explain some of the terms used in carbon footprinting and across the topic of Net Zero.

Carbon Balance	The carbon balance is calculated by totalling all sources of emissions and then deducting all sequestration and offsets from renewable energy and recycling. The carbon balance is the first key step to be able to understand what the current position of the farm is and the 'size of the challenge' to reach net zero. It is also the first opportunity to decide on the key management opportunities that can be used to reduce emissions and improve sequestration by evaluating the balance between the two.
Carbon Cycle	Carbon cycles through the environment in different ways, It travels into the atmosphere through the respiration of plants and animals, and through burning of fossil fuels. It passes into the soil when plants and animals die and decompose, and then it moves from the atmosphere into plants during photosynthesis.
Carbon dioxide	One of the three main greenhouse gases produced by agriculture. Carbon dioxide mainly arises from the burning of fossil fuels and is the gas that is the main concern for other industries. Within farming systems, emissions from carbon dioxide represent the smallest percentage of total emissions.
Carbon footprint	The carbon footprint is another term used to express the amount of greenhouse gases that are emitted as a result of the activities taking place on a farm. It is expressed in terms of kg (or tonnes) of CO2e.
kg CO_2e	kg CO_2 equivalent is the standard reporting metric for greenhouse gases, which uses the global warming impact of each gas in comparison to CO_2. This includes emissions from carbon dioxide, nitrous oxide and methane.
Carbon sequestration	Capturing carbon from the air and storing it on the land, either in soils, trees or habitats.
Carbon storage	Farms and commons are already storing large amounts of carbon due to historic land use. This carbon stored in soils, biomass and habitats is very important to protect, but isn't able to be used against annual emissions. Carbon that is sequestered as a result of management practices (for example soils, grassland, and hedgerow management or through the creation of new habitats or planting trees).
GWP	GWP stands for Global Warming Potential. This is the ability of a greenhouse gas to cause global temperature rise. Often this has been expressed over an 100 year time period (hence the term GWP100).
GWP* / GWP100	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. This is 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 system. An example of this in action, is considering 1 tonne of both methane and carbon dioxide that were released 30 years ago; the carbon dioxide is still present in the atmosphere and having a warming impact, but the methane has dissipated and is having no effect. If methane rates can be stabilised then it will not cause an increase in global temperature.

This work has been pioneered by academics and scientists at Oxford Martin School of Oxford University, including Professor Myles Allen and Dr Michelle Cain and has led to the development of a new metric for assessing methane, GWP*. A summary of their work in this area can be viewed here. This work has very much been focussed on the issue of global livestock numbers and their impact on global temperature rise; as such there is a need to translate these global forecasts into something that is meaningful for individual farm footprints. Currently this is being developed and as such, within the Calculator there is the ability to understand how this shift to the new GWP* will impact a farm's footprint.

Methane	The greenhouse gas which arises from enteric fermentation from ruminant animals and how manures and slurries are managed and handled from all livestock systems. Methane does not remain in the atmosphere for as long as other greenhouse gases and is sometimes reported differently (see GWP* above).
Net zero	When the business is not emitting more carbon than sequestration, achieved through reducing emissions as much as possible before offsetting the remainder through sequestration.
Nitrous oxide	A potent greenhouse gas which originates from how soils, fertilisers and manures are managed on-farm. Nitrous oxide is 298 times more potent in terms of its global warming potential than carbon dioxide is. Currently 70% of nitrous oxide emissions arise from agricultural activities in the UK.
Soil Testing	Details on the soil tests carried out can be found on our website.
Soil Organic Matter	Soil Organic Matter (SOM) is the organic component of soil, made up of materials such as plant residues, living organisms and decomposing organic matter. SOM acts like a sponge, able to increase the ability of soil to store water. It also serves as a reservoir of nutrients for crops, provides soil aggregation, increases nutrient exchange and reduces competition. Learn more at: bit.ly/FCT-SOM
Soil Organic Carbon	Soil organic carbon makes up a proportion of the soil organic matter. It is formed from the decomposing plant matter which is in the soil. Soil organic carbon can be analysed using a dry combustion test in the lab.
Soil Health	Soil underpins the entire farm system. Healthy, well-managed soils support productive and healthy crops and pasture, which in turn supports a profitable and resilient farming system. A soil that accumulates organic matter will sequester carbon, increase fertility and increase productivity. Learn more at: Soils.
Soil Sequestration	Optimising soil carbon sequestration is a fundamental part of ensuring that there are optimal levels of carbon within the soil which are contributing to healthy and resilient soils is an important goal. As well as providing a climate change solution which is unique to agriculture, increasing soil organic matter has a number of co-benefits including improving soil water holding capacity, improving nutrient use efficiency and soil fertility, and supporting biodiversity.
Soil Carbon Yield	The carbon yield of fields was calculated based on the bulk density and soil organic carbon percentage. This gives the amount of carbon in tonnes/ha in your soil at each depth.