

The benefits of carbon footprinting



As costs creep upwards, the pressure is mounting for farmers and growers to try and find ways to save money and run their farms more efficiently whilst cutting their greenhouse gas emissions. In order to make improvements on the farm you need to know what you are doing now. One way to do this is to complete a 'carbon assessment'.



The SWARM Hub team sat down with James Coumbe, Duchy College's Farms Director, Kelly Elvidge the Farm Secretary, and Sam Adams from the Soil Association to have a closer look at the farm's carbon footprint. The Low Carbon Farming FCAT tool was used as it provides an instant carbon emissions summary report. The simple report is separated into four sections; nutrients and manures, soil and grassland, livestock, and energy and fuel usage.

How did Duchy Home Farm do?

Tasks in each section are scored on a scale from 1 to 5, 5 being excellent practice towards reducing emissions, 1 being poor practice with lots of room for improvement. Farms are advised to aim as high as possible within their own constraints.

Nutrients and manures

In the nutrient and manures section the farm is scored on everything from building soil fertility and assessing nutrient levels, to manure and slurry storage, application timing and methods, and crop residue management. For the majority of the tasks in this section Duchy Home Farm scored a respectable 3 or 4. However, one area which could be improved upon is farmyard manure (FYM) storage which only scored 1. Solid manure that is not seeping can be safely stored

in A-shaped field heaps as it done at Duchy Home Farm. Nevertheless, to minimise the risk of pollutant losses through surface run-off, storing on a hard standing is considered best practice. Also manure heaps should be covered either by storing under a covered area or sheeted to stop excess water entering the heap and producing run off. A cover will also lessen the amount of ammonia being lost to the atmosphere.

Livestock

The management of livestock plays a significant part in addressing greenhouse gas emissions from agriculture. Ruminants generate large amounts of methane which is a greenhouse gas. Duchy Home Farm scored 4 and above in most areas relating to livestock other than feed sourcing which scored a moderate 3. Imported animal feed carries its own carbon footprint which is largely influenced by the distance it has been transported. Sourcing feed as locally as possible will reduce indirect emissions from the farm.

Soil and grassland

Over a quarter of all living species on the planet are found in the soil and many of these organisms play a crucial role in carbon storage. They are involved in many biological processes



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including decomposition, nitrogen fixation, nutrient storage nutrient transfer in to plant available forms and soil aeration. All of these processes are substantially affected by the biological, chemical and physical conditions of the soil, therefore, soil maintenance is key to a healthy soil.

For maintaining soil biology Duchy Home Farm scored 5. At present the farm alleviates compaction to allow water to drain through freely and to maintain good oxygen levels in the soil, and monitors soil worm counts. Continuous soil cover is maintained as much as possible throughout the year, with minimal bare periods. Legumes are included in the rotation to boost nitrogen levels fixed from the atmosphere and to increase organic matter; manure is also applied to enhance soil physical properties. The farm carried out comprehensive soil tests in 2011, and resamples select fields bi-annually.

One area within soil and grassland where there is room for improvement is grassland species diversity. Currently Duchy Home Farm scores 2. The more species there are in the ley, the more opportunity there is for carbon sequestration. At present the farm has a limited mix of 2 – 5 species. According to the FCAT tool, the more diverse a species mix the better.

Energy and fuel usage

The result of the energy audit is the only section of the tool not represented by a scale. Instead the FCAT calculates the emissions produced by assessing energy and fuel usage. Duchy Home Farm emits 166 850KgCO₂ equivalent. This figure is not easily comparable to other farms that have been carbon footprinted, as every calculator uses different assumptions and considers different factors and all farms, even those of the same system, are invariably different in the manner in which energy and fuels are required. The objective is to use the

figure generated as a benchmark and gradually reduce it through improved energy and fuel use efficiency and the increased use of renewable energy.

Conclusions

The FCAT calculator has proved to be a simple and easy tool to use once the data has been collected. However, it does not take into account carbon sequestration (capture and storage of carbon in biomass). Agriculture produces a lot of emissions but it also has huge carbon sequestration potential.

The FCAT calculations for Duchy Home Farm carbon footprint reveal that there is room for improvement.



James Coumbe, Duchy College's Home Farm Director says *"Carbon footprinting is not an area farmers have naturally considered but overall we have found this a useful exercise as it is important to look at and understand the full implications of how we run our business in relation to carbon emissions"*.

If you would like to find out more about carbon footprinting or low carbon farming please visit the [low carbon farming pages](#) of the SWARM Hub.