

## The Carbon Footprint of Trenance Farm, year ending 2022

Trenance Farm, a Farm Net Zero Monitor Farm run by Kevin and Katie Hoare, is the first to have a bespoke Bennamann slurry lagoon, on-site plant room and biogas filtration system to produce vehicle grade saleable fugitive methane. The first year of methane capture was completed in 2022. The details of the impact on the farm carbon footprint are presented here.

Present carbon balance	Carbon balance per year	Notes
Carbon balance	87.53tCO <sub>2</sub> e emitted	<ul style="list-style-type: none"> <li>• 602tCO<sub>2</sub>e of methane captured</li> <li>• Soil carbon data not included</li> </ul>
	1.03kgCO <sub>2</sub> e per kg FPCM	Without methane capture included
	0.13 kgCO <sub>2</sub> e per kg FPCM	With methane capture included

Standard emissions from cows includes loss from yards and in manure storage. There is a risk of double accounting here because the standard losses from manure storage are reduced with the Bennamann system. In this model it has been stated that cows are on grass all the time (where methane losses are at the minimum) to reduce the double accounting. However, it is possible that the standard emissions per cow will be lower than those modelled.

In addition, any change in the handling of slurry will alter the microbial activity in that slurry and therefore the methane production. In these calculations, the comparative methane loss in an equivalent uncovered pit cannot be used, i.e. would the 22,750kg of methane captured be the same volume in an uncovered pit? This data will be quantified in the future.

Fuel usage	Drop of 3.62 tCO <sub>2</sub> e	Reduction of 1,569 litres of red diesel
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The methane-powered New Holland T7 was used for yard work, totalling 840 hours, this is the main source by which red diesel emissions were reduced.

The carbon footprint from fuel savings needs to be aligned with the carbon footprint of the new tractor (i.e. embedded carbon as Scope 3) before total carbon savings for fuel usage can be completed.

EMISSIONS	tonnes CO <sub>2</sub> e	OFFSETS	tonnes CO <sub>2</sub> e
Livestock	629.9	Hedgerows	-29.2
Inputs	51.7	Recycling	-13.2
Fuels	39.1	Woodland	-2.1
Inventory	12.2	Wetland	-0.03
Materials	1.14		
<b>TOTAL</b>	<b>734.0</b>	<b>TOTAL</b>	<b>-44.5</b>

### Opportunities:

Reduction in bought in fertiliser through optimising the use of digestate, and forage legumes.  
 Reduction in bought in protein by increasing home grown protein including silage crude protein.  
 Enhanced hedgerow management, and other natural capital options.

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