



Agrecalc Report - Agricultural Resource Efficiency

Sector: Sheep
 Enterprise type: Crossbred ewe flock
 System: Store/finisher
 Group:
 Producer:
 Farm: Gulliford Farm

Region: Not specified
 Year calc relates: End Dec 2020
 Reporting date: 12th Jan 2021
 Report reference: Gulliford
 Compared to: Sheep Enterprises (system specific) 2017 to 2021 (1039) reports

Quick glance enterprise emissions

	* kg CO ₂ e/ kg dwt	Opportunity Level	Comparison
Enteric fermentation	11.76	Low	17.24
Manure management	4.14	Low	6.01
Fertiliser	1.96	Low	4.20
Purchased feed	0.35	Low	1.48
Purchased bedding	-	Low	0.09
Fuel	0.46	Low	1.03
Electricity	0.07	Low	0.10
Other	1.56	Medium	0.85
Total emissions **	20.31	Low	31.01

Other: crop residues, lime, transport and waste

Physical performance of enterprise

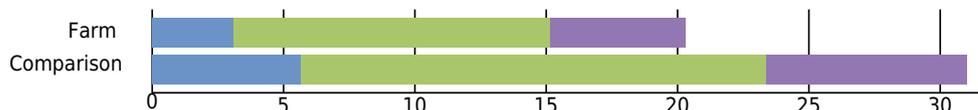
	Value	Comparison
Area of land utilised (ha)	75	137
Female breeding stock (no)	332	475
Lamb sale weight (kg lwt/head)	38.00	42.01
Lamb sale weight (kg dwt/head)	17.10	19.06
Wool sales (kg)	1,400	1,228
Purchased feed use (kg/ewe)	42	69
Homegrown feed use (kg/ewe)	5,518	821
Mortality (%)	5	7
Lambing percentage (%)	160	158
Ewe cull rate (%)	21	35
Enterprise net output (kgs)	12,162	14,594

Whole farm sustainability indicators

Nitrogen Use	19.98	kg/ha	Water use	500.00	litres
Phosphate Use	9.99	kg/ha	Stocking density	0.55	LU/ha
Potash Use	9.99	kg/ha	Sequestration	27.23	tCO ₂ e
Waste	200.00	kg	Renewable energy used	2,000.00	kWh

Emissions by gas and benchmark comparison

CO₂ : 3.10 kg CO₂e/unit output
 CH₄ : 12.08 kg CO₂e/unit output
 N₂O : 5.13 kg CO₂e/unit output



* Your carbon footprint is expressed in units of CO₂ equivalents (CO₂e) per unit of output e.g. kg CO₂e per kg dwt of cold carcase. This allows the efficiency of the enterprise to be compared. The main greenhouse gases emitted by agriculture are CH₄ = Methane (Predominantly from animal digestion); N₂O = Nitrous oxide (Predominantly from manure and fertiliser); CO₂ = Carbon dioxide (Predominantly from burning of fossil fuels).

** Total emissions may differ due to rounding. Emissions may be skewed on a year to year basis due to timing of sales therefore results are best monitored over a three year (minimum) period.

Improve efficiency and environmental credentials

What does a carbon footprint actually tell you?

There is a strong correlation between efficiency, profitability and low carbon emissions. The lower your carbon footprint the more effective inputs have been at generating saleable product i.e. increased utilisation of costly inputs. Each farm and system have natural limitations but, within this context, the process can identify carbon 'hotspots' on farm and is therefore a steer to improve efficiency and reduce greenhouse gas emissions.

How accurate does the information need to be?

The more accurate the information entered, the more meaningful the output. Where possible on farm records should be used to provide accurate farm-level data.

Agrecalc report guide

A: Quick glance enterprise emissions The 'opportunity level' (high, medium or low) is the likelihood for improvement gauged against other farms in that sector.

B: Physical performance of enterprise It is much easier to relate to performance indicators, actual sales, feeds and other inputs used. This becomes particularly useful when comparing years and for group comparisons.

C. Whole farm sustainability indicators Sustainability is the ability to deliver a product the customer wants year after year without adversely impacting the environment. Carbon is, however, only one part of the wider sustainability 'formula', some wider indicators are shown in this section.

D. Whole farm emissions by gas and benchmarking comparison Carbon footprinting similar farm types allows a business to benchmark environmental performance against a group average.

E. Potential actions to reduce emissions Examples of practical measures that could reduce emissions are shown below. Technical advice should be sought before making any business changes.

Mitigation area	Actions
Energy and fuels	<ul style="list-style-type: none">• Install smart meter to monitor electricity use - assess efficiency of equipment and activities. Use thermostats, time clocks, motion sensors and low energy bulbs, increase lagging on hot water pipes, reduce number of hot washes in dairy and renew milk pump or other equipment
Renewable energy	<ul style="list-style-type: none">• Record fuel use per tractor and activity - assess efficiency of vehicles and operations. Undertake regular machinery checks and maintenance, use correct tyre pressure, improve journey planning
Fertiliser and manure	<ul style="list-style-type: none">• Undertake a renewable energy feasibility study. Consider installing a wind turbine, an anaerobic digester, developing farm-scale micro hydro electricity, using a combined heat and power plant, growing trees as biomass fuel, using solar panels, ground source heat pumps or woodchip burners
Livestock management	<ul style="list-style-type: none">• Analyse soil and organic manure - ensure efficient use of organic and inorganic fertiliser. Apply nitrogen at optimum rate and timing for crops, maintain clover content of swards, consider covering slurry stores and injecting slurry
Locking carbon into the soil	<ul style="list-style-type: none">• Increase livestock productivity. Improve feed conversion efficiency, increase calving or lambing percentage, reduce mortalities, increase weaning percentage, reduce age of calving, regularly review animal health plans, analyse silage or other homegrown forage
	<ul style="list-style-type: none">• Create carbon sinks. Protect peatland and moorland from damage by avoiding over grazing, consider reduced tillage and ploughing in stubble and other crop residues, control soil erosion, create wildlife corridors along water margins, field margins and headlands, retain and conserve semi-natural grasslands, manage existing woodlands on farm and create new ones.

Any questions regarding this report or to discuss other financial and carbon efficiency measures please contact your local SRUC office or the Rural Business Unit.

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