

Gurteen Agricultural College
Environmental and Sustainable
Farming

Level 6 Certification

In association with

Susliving

Module 7

Farming and Climate Change

**7.2, 7.4, 7.5 & 7.6 Greenhouse Gases &
Carbon – Footprints, Sinks & Credits**

FARMING & CLIMATE CHANGE

Carbon Footprint for Irish Farm Production Systems

Carbon footprint : is a measure of the impact that activities or products have on our greenhouse gas emissions, taking into account the whole life cycle of the product.

Where do agricultural emissions come from?

1. methane gas from cows
2. methane and nitrous oxide gas from slurry
3. nitrous oxide from urine patches and N fertilizer
4. energy use – fuel consumption (Each fuel type has a known quantity of carbon per unit of fuel.)

How do Irish agriculture products rate for carbon footprint?

- Emissions per kg milk produced in EU – Ireland is the most carbon efficient milk producer in EU.
- Emissions per kg beef produced in EU – Ireland is the 5th most carbon efficient beef producer in EU.
- Irish beef at 20kg CO₂/kg beef compares favourably to Brazilian beef at 48kg CO₂/kg beef.
- However Ireland is second to only New Zealand in terms of GHG emissions from agriculture as a percentage of national totals.

Beef Production Systems

- ◆ Dairy beef has lower emissions than suckler beef.
- ◆ Research farm technologies can reduce emissions by 20%.

What are opportunities to reduce emissions?

Farm management

- N – efficiency
- Clover
- Animal diet
- Reduced finishing time
- Extended grazing
- Farm energy use – reduce dependence on fossil fuels
- Mixed farm versus beef
- Reduced imported fertilizer

Irish food production is good from a carbon viewpoint compared to other countries. However there is increased pressure on all sectors of the economy, including agriculture, to reduce GHG emissions in order to reach reduction targets.

CARBON FOOTPRINT, CARBON CREDITS

Understanding the carbon emissions produced by goods and services across their lifecycle is of fundamental importance when it comes to understanding how to reduce those emissions.

Product carbon footprinting is not easy. If the appropriate method is not employed the results can also be wildly wrong. This is why just over five years ago the Carbon Trust was involved in creating the world's first standard for product carbon footprint certification.

Carbon footprints can also be communicated to customers and consumers, which can help them to make informed choices or comparisons. It is a clear signal that a company is taking responsible action on carbon emissions, and differentiates a product from its competitors.

The Carbon Trust's Carbon Reduction Label is now used on a huge variety of goods and services.

When a company makes a decision to calculate the carbon footprints of its products, there are often three key factors in play: (1) understanding, (2) accuracy and (3) cost. The process needs to provide a good understanding of a product lifecycle, be accurate enough to draw meaningful conclusions, and it needs to be affordable.

The Carbon Trust hope that by evolving the concept of product carbon footprinting, it can accelerate the move to a sustainable, low carbon

economy. Carbon Trust is a not-for-profit company which provides support to business by cutting carbon emissions.

CARBON SINKS

A carbon sink is anything that absorbs more carbon than it releases whilst a carbon source is anything that releases more carbon than they absorb. Forests, soils, oceans and the atmosphere all store carbon and this carbon moves between them in a continuous cycle. Consequently, forests can act as sources or sinks at different times.

The most important carbon sinks however are fossil fuel deposits as they have the unique benefit of being buried deep inside the earth, naturally separated from the carbon cycling in the atmosphere. This separation ended when humans began burning coal, oil and natural gas, causing greenhouse gas concentrations in the atmosphere to soar.

Because of this, a lot of emphasis and hope has been put into the ability of trees, other plants and the soil to temporarily sink the carbon. The Kyoto Protocol suggests that the absorption of carbon dioxide by trees and the soil is just as valid a means to achieve emission reduction commitments as cutting carbon dioxide emissions from fossil fuels.

CARBON TRADING

Carbon emissions trading is emissions trading specifically for carbon dioxide CO₂ or its equivalent CO₂e. Carbon trading currently makes up the bulk of emissions trading and is the central pillar of the Kyoto Protocol and other international agreements aimed at slowing climate change.

Carbon trading has both proponents and detractors :

- **FOR:** Using the market (carbon trading) to address the environmental crisis allows reduction of greenhouse gas emissions in the most economical manner.
- **AGAINST:** Turning carbon into a tradable commodity is equal to passing control for the climate into the same hands that are destroying the climate. This has so far led to increased carbon in the atmosphere rather than reductions.