

REDUCING THE EMISSIONS INTENSITY OF LIVESTOCK PRODUCTION: CASE STUDIES OF SUCCESS

GLOBAL
RESEARCH
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

IRELAND

Scale: National
System: Pastoral
Sector: Beef

Reducing the greenhouse gas emissions intensity of Irish beef cattle production

A beef farm sustainability programme was developed with a key aim being to reduce the greenhouse gas (GHG) emissions intensity of Irish beef production systems. An important objective was to communicate to farmers that GHG emissions can be reduced and profitability increased concurrently.



Background

Beef production is the most widespread farm enterprise in Ireland and represents approximately 30% of total agricultural output. Although there are a myriad of production systems operated on beef farms, pasture-based systems predominate. Agriculturally derived GHG emissions represent 32% of total GHG emissions. Ireland's target under the EU climate change 'Effort Sharing Decision' is to reduce GHG emissions from the sectors outside of the Emissions Trading Scheme by 20% by 2020; therefore it is clear that agriculture has a considerable challenge. A further consideration is the increasing consumer focus on sustainable consumption decisions. In response, Teagasc and Bord Bia (the Irish Food Board) collaboratively developed a GHG emissions assessment programme to reduce the emissions intensity of Irish beef farms. This was incorporated into the existing Bord Bia Beef Quality Assurance Scheme (BQAS), a national scheme that requires rigorous quality standards for traceability, animal health and welfare, remedies, biosecurity and feeds.

Key actions & their effects on productivity, income & food security

As part of the BQAS, the GHG assessment programme is carried out on 45,000 cattle farms (accounting for 90% of the beef produced in Ireland) on an 18 month cycle. This includes an online knowledge transfer tool, the Beef Carbon Navigator, which recommends mitigation strategies to beef farmers. The Beef Carbon Navigator enables farmers to identify measures to reduce GHG emissions and to achieve these reductions by setting targets for key aspects of their production system. The focus of the Beef Carbon Navigator is 'distance to target', providing farmers with an indication of how current and target levels of GHG emissions relate to comparable farming systems. It does not estimate total beef farm system GHG emissions; the aim is to 'cut' rather than 'count' emissions. The programme focuses on mitigation options, such as more efficient use of nutrients and improved

animal performance, that are cost effective and in most cases simultaneously improve farm profitability. The GHG assessment programme and the Beef Carbon Navigator have also been incorporated into Bord Bia's 'Origin Green'; an independently verified sustainability initiative which unites governmental, private sector and farmers in a national-scale programme.

Effect of actions on emissions intensity of livestock production

Reductions have been observed in Ireland's absolute GHG emissions from agriculture, being 7% lower in 2013 than in 1990. Irish beef production systems have also been ranked fifth lowest of 27 EU member states in terms of GHG emissions intensity. Production efficiency at farm level has a large effect on emissions intensity, meaning that improvements in farm management practices can have an important role in mitigation.

Teagasc have a programme underway to assess GHG emissions levels at the farm level, helping to measure the outcomes from uptake of the Beef Carbon Navigator tool. Results from a detailed pilot phase in 2011 involving 200 farmers participating in the BQAS showed that suckler beef and beef finishing systems had higher emissions than dairy beef systems but found, although numerically different, that there was no significant differences between suckler beef and dairy beef systems (Figure 1). Given that dairy cow numbers increased by 13% between 2005 and 2014, while suckler beef cow numbers declined by 7% and total beef output remained constant in the same time period, it is likely that the GHG intensity of Irish beef has reduced due an increase in the proportion of beef coming from the dairy herd.

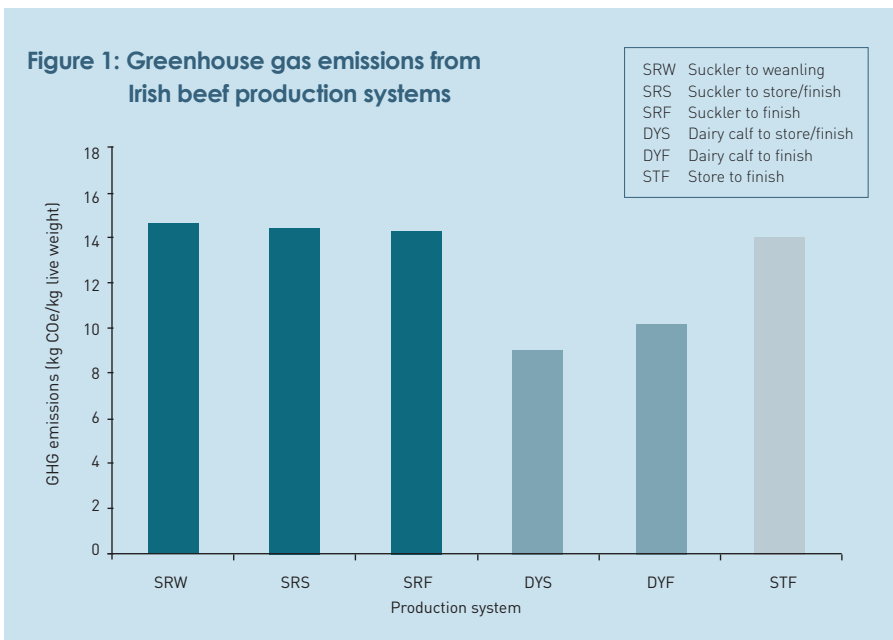
It is anticipated that the dairy sector in Ireland will expand in response to the abolition of milk quotas in the EU in 2015. This ongoing change in the national bovine population profile will lead to further increases in dairy beef as a proportion of national beef output and hence a continued reduction in the emissions intensity of Irish beef production.

Co-benefits and trade-offs

Improving the efficiency of beef production brings dual benefits of reducing emissions intensity and increasing farm economic performance. This principle underpins the mitigation options available in the Beef Carbon Navigator. For example, breeding strategies followed by suckler beef farmers in Ireland in recent years have focused on terminal (carcass) traits in response to market signals. However, this has coincided with a reduction in the genetic merit of suckler beef cows for maternal traits, such as fertility and milk yield. These maternal traits are important factors affecting the efficiency of suckler beef production systems. The Beef Carbon Navigator encourages the adoption of more balanced breeding policies to improve animal performance.

Another co-benefit is the extension of the farm assessment programme to encompass other sustainability measures, including water and biodiversity. These are in addition to existing animal health/welfare, traceability and soil management.

Figure 1: Greenhouse gas emissions from Irish beef production systems



Implications for adaptation

The adaptive capacity of livestock systems depends on the flexibility of farmer behaviour, which in turn is driven by economic, social and cultural factors. Fundamentally, the Beef Carbon Navigator is a knowledge transfer tool aimed at increasing farmer awareness of on-farm GHG emissions. The objective is to communicate to the farmer that, by improving performance or adopting new technologies, GHG emissions can be reduced and profitability increased. This in turn increases the scope for on-farm adaptations to climate change. Current performance and targets are presented both numerically and graphically in the output reports with the emphasis on highlighting the scope for change. By communicating both environmental and financial benefits, the objective is to change farmers' perceptions so that these aspects of farm performance are considered together.

Challenges to implementation and adoption

The uptake of computerised technologies on Irish farms is relatively low, which is problematic given the use of web-enabled software in the GHG assessment programme. The percolation of these technologies into all aspects of daily life is expected to change in the coming years but to further encourage uptake, the Beef Carbon Navigator has been included as a compulsory task for the nearly 30,000 farmers participating in an EU-funded breed improvement programme that was launched in 2015.

There also remains the ongoing challenge of engaging farmers with the GHG implications of their farming activities. Although the Beef Carbon Navigator has integrated the financial aspects of mitigation into the output reports generated for farmers, the programme remains ostensibly environmentally focussed. By increasing awareness around these issues and, in particular, by highlighting concurrent benefits for farm economics, engagement by farmers and the wider beef industry has increased.

Further information

Fact Sheet on Irish Agriculture – May 2013

<http://www.agriculture.gov.ie/media/migration/publications/2015/MAY2015FACTSHEETFINAL060515.pdf>

Ireland's Provisional Greenhouse Gas Emissions in 2013

<http://epa.ie/pubs/reports/air/airemissions/irelandshghemissions2013.html#.VdH16-lFC70>

Bord Bia

www.bordbia.ie

Origin Green

www.origingreen.ie

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