

There's no vaccine for climate change

We are all too aware of the impact of the COVID-19 pandemic. Climate change is another major global risk which requires our attention, if it is not to cause even greater havoc. Feeding the world while taking climate action will require an industry-wide effort involving farmers, industry stakeholders, Government and consumers.

Tom O'Dwyer
Head of Signpost Programme*



In December, EU leaders agreed to reduce climate emissions 55% by 2030. In the same week, the Department of Agriculture, Food and the Marine published the Ag Climate roadmap. Its aim is to deliver on the 2019 Climate Action Plan and develop a climate neutral food system by 2050.

In short, there are significant ambitions to reduce emissions from agriculture in the coming years.

The reason is global warming. According to the United Nations, 2020 was the warmest year since records began. Linked to this warming there has been a rise in extreme weather events, including wildfires and hurricanes; ice at both poles is melting at a worrying pace.

Business as usual is not an option. This is highlighted in the Ag Climate roadmap: "If Ireland wishes to remain a world leader in the production, management and marketing of low-carbon, high-quality sustainable and traceable food, then significant efforts will be required...to maximise production efficiency while minimising the effects on the climate and reducing the environmental footprint of agriculture."

However, we can face the challenge

with confidence as we have seen how agriculture has responded to previous challenges. The sector has increased food production to levels once believed impossible. We all can play a part in limiting further climate change.

The global agriculture sector now has an opportunity to make yet another major contribution, to produce healthy, nutritious and wholesome food in a more sustainable manner.

What is sustainable agriculture?

Sustainable agriculture means meeting society's present food and textile needs, without compromising the ability of current or future generations to meet their needs.

In my experience, Irish farmers have a deep desire to leave their farm in a better state for the next generation. But it can be a struggle to balance the demands for economic and environmental sustainability.

What are the consequences when these competing demands are out of sync? When farming practices are compromising the ability of future generations of farmers to farm through a loss of biodiversity, a reduction in water quality or excessive emissions?

Gases

The three greenhouse gases (GHGs) are: carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O); the



main agricultural GHGs are CH₄ and N₂O. Ruminants have bacteria in the rumen which produce CH₄ during the digestion process. Soil emits N₂O when microbes in the soil break down urine, faeces and fertilisers; a key driver of N₂O emissions is nitrogen surplus (N inputs minus N outputs).

In addition, ammonia gas (NH₃) is an air pollutant, which has an adverse effect on human health and the environment. Agricultural activities account for over 99% of our national ammonia emissions.

Research has demonstrated how farming can reduce the "emissions intensity" of food production. The first step is to produce food as efficiently as possible. In Ireland, for livestock production this means a grass-based diet, good genetics and healthy, thriving animals. There are additional actions that farmers can take to reduce on-farm emissions (see panel).

What one change will you make on your farm in 2021 to reduce emissions (or reduce nutrient losses or improve biodiversity)? Some of the practice changes are straightforward, e.g. switching N fertiliser source, while others will require upskilling and significant changes in management practices, e.g. establishment and man-



What change will you make?

The move to more sustainable farming practices will always start with the first step. This time of year is often used for planning and decision-making. What one change will you make on your farm in 2021 on your path towards a more sustainable farming future? Some suggestions:

- Inform yourself of the facts behind global warning (caused by GHG emissions) and ammonia emissions.
- Check out your farm's carbon footprint figure on the Bord Bia Farmer Feedback Report (beef and dairy farmers), and compare your performance against industry benchmarks.
- Talk with your farm advisor to identify actions to reduce your carbon footprint in 2021.
- Select one action that you can make happen – write it down, and commit yourself to doing it.

agement of clover in pasture.

There is a range of proven practices, which if widely adopted by Irish farmers, will reduce agricultural emissions. That is a fantastic starting point – there are tools in the emissions reduction toolbox. Finally, Teagasc is committed to working with farmers, and agricultural sector partners, to enable farmers adapt their farming practices to reduce agricultural emissions.

New appointment: *Teagasc has appointed Dr Tom O'Dwyer, as head of the Signpost programme. Tom began his career with Teagasc as a REPS planner for north Tipperary in 1995, before taking up a role as a Dairy Specialist in 1998. In 2007, he was appointed Area Manager for Donegal and spent three years managing the advisory service in the northwest before returning south as Head of Dairy Knowledge Transfer, based in Moorepark, in 2010. Teagasc will launch the Signpost programme early in 2021, and is committed to working with farmers to enable them to take actions to "lighten the load" of farming on the land.

What are the mitigation options?

Teagasc has identified the following practices as being key to reducing agricultural emissions. The best options for each farm will vary depending on factors such as the farm system, location and the level of farming intensity. Many of the options (though not all) can combine profitability gains while contributing to meeting sustainability challenges.

- Liming to increase soil pH to its optimum range (reducing the need for N fertilisers).
- Optimisation of the amount, timing, and placement of N fertilisers (and for some farms, a reduction in the amount of N fertiliser used)
- More efficient use of slurry and animal manures (reducing the need for N fertilisers).
- Switching to protected urea as a fertiliser N source.
- Applying all slurry using Low Emission Slurry Spreading (LESS)

equipment (dribble bar, trailing shoe or injection).

- Improved pasture management (to increase grass utilisation, without increasing N fertiliser).
- Incorporation of clover into swards (replacing N fertilisers).
- Reduced crude protein levels in supplementary feeds for grazing ruminants (maximum of 15%).
- Better breeding – continued focus on use of high EBI, high DBI and high Eurostar index bulls (providing more carbon efficient animals).
- Milk recording and weight recording (for better breeding and management decisions).
- Reduced energy usage.
- Improved management of hedgerows and incorporation of trees on the farm (as hedges and trees grow, they store carbon in trunks, branches, leaves, and roots).