

# Signpost Farms: Taking Steps to Reduce GHG Emissions

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## **Introduction**

Irish farmers are taking steps to reduce greenhouse gas emissions from their farming activities. Data published by the EPA indicates that GHG emissions declined by 0.7% and 4.6% in 2022 and 2023 respectively, to stand at 20.78 MtCO<sub>2</sub>e of greenhouse gas (GHG) emissions in 2023, representing 37.8% of total GHG emissions for that year. National figures also indicate reduced sales of fertiliser nitrogen (N) and upward trends in the usage of protected urea, lime and LESS. Reducing greenhouse gas emissions on your farm is possible and achievable. Many of the currently available solutions have other benefits, including increased farm system efficiency, improvements to water quality, enhanced biodiversity and improved profitability. However, to achieve these multiple benefits requires change.

## **About the Signpost Programme**

The Signpost Programme was created to help farmers understand their on-farm options to reduce greenhouse gas emissions, and then to support them in implementing the new practices on their farms.

Listed on below are the practical solutions promoted with the Signpost Farmers, and with all farmers, through our series of "12 Steps" leaflets available [here](#).

These solutions are available to all farmers now. Simultaneously, Teagasc and others are researching solutions that will help farmers continue to reduce emissions and improve farm performance in the future.

### Available solutions to reduce GHG emissions

1. Reduce fertiliser N use (through optimising soil pH and soil P and K levels, increasing the proportion of grass/ clover swards)
2. Use NBPT - urea (protected urea) as your source of fertiliser N
3. Manage and make best use of animal slurries and manures
4. Increase and optimise milk and meat production from pasture
5. Use breeding indices to inform better breeding decisions
6. Achieve targets for age at first calving and replacement rate
7. Target earlier finishing of beef cattle and lambs
8. Review your animal health management practices and improve where appropriate
9. Improve hedgerow management and consider planting new hedgerows or trees
10. For tillage farmers, mitigation measures include sowing cover crops, straw incorporation and the use of organic manures (to replace fertiliser N)

Signpost Farmers were identified to act as demonstration farmers. With the support of a dedicated advisor, they were guided to adopt recommended practices on their farms, and to share their experiences with other farmers.

### Signpost Farmers' Experience

Earlier this year, the Signpost Team conducted a survey of the Signpost Farmers to measure their climate knowledge, mind-set, attitudes and beliefs. A total of 75 responses were received, representing a 62% response rate.

In one question, farmers were asked to rank their level of agreement with a number of statements both "before" and "after" they joined the Signpost Farms Programme as a demonstration farmer. Their answers indicate that there is an increased awareness amongst the Signpost Farmers of their farm's GHG emissions, and of how their farming activities contribute to their annual GHG emissions. All Signpost Farmers have a plan in place to reduce their farm's GHG emissions, and they also report that they increasingly consider the impact of weather on their future plans. Interestingly, the Signpost Farmers indicate they now realise that they could do more to reduce their GHG emissions, while continuing to place a high importance on maximising farm profit. In another question, respondents indicated that they had either a "reasonable" or "very good" understanding of the actions they can take to reduce their farm's emissions.

Table 1. Signpost Farmers level of agreement with six statements (n = 75, August, 2024)

Statement	Level of agreement BEFORE (1 – 5)	Level of agreement AFTER (1 – 5)
1. I know the level of GHG emissions generated by my farming activities.	2.42	4.00
2. I understand how my farming activities contribute to GHG emissions.	3.15	4.15
3. I have a clear plan to reduce GHG emissions on my farm.	2.80	4.10
4. I consider the impact of changing weather patterns on my farm.	3.51	4.12
5. I could do more to reduce agricultural GHG emissions.	3.47	3.80
6. I think it is important to make the largest possible profit from my farming activities.	4.09	4.03

The survey also explored both the “ease of use” and the “usefulness” of nine climate mitigation technologies; a summary of the responses is presented in Figures 1 and 2 below.

Farmers reported that using protected urea and maintaining optimum soil pH were easier technologies to adopt and incorporate into their farming system; whereas farmers tended to rank maintaining optimum soil P and K levels, using organic manures, increasing clover content (grassland) / planting legume crops (tillage), and planting trees/ forestry as more difficult technologies to adopt. Approximately one third of the tillage farmer respondents ranked minimal cultivation as “very difficult” (perhaps reflecting a soil type challenge), while all tillage respondents ranked cover/ green crops and straw incorporation as either “easy” or “very easy”.

The ranking changed somewhat when respondents were asked to rate the usefulness of the same nine technologies. The usefulness of the first five was indicated by the farmers’ responses. It was

perhaps a little surprising that 41% of respondents did not recognise the usefulness of planting trees or forestry as a climate mitigation measure. For the three measures more applicable to tillage systems, the tillage farmer respondents recognised the usefulness of the measures, mainly answering “useful” or “very useful”.

Finally, 44% of farmer respondents indicated that taking action to reduce climate change will improve their quality of life (just 15% responded that it would reduce their quality of life), with 80% indicating that taking climate action will leave the farm in a better position for the next generation.

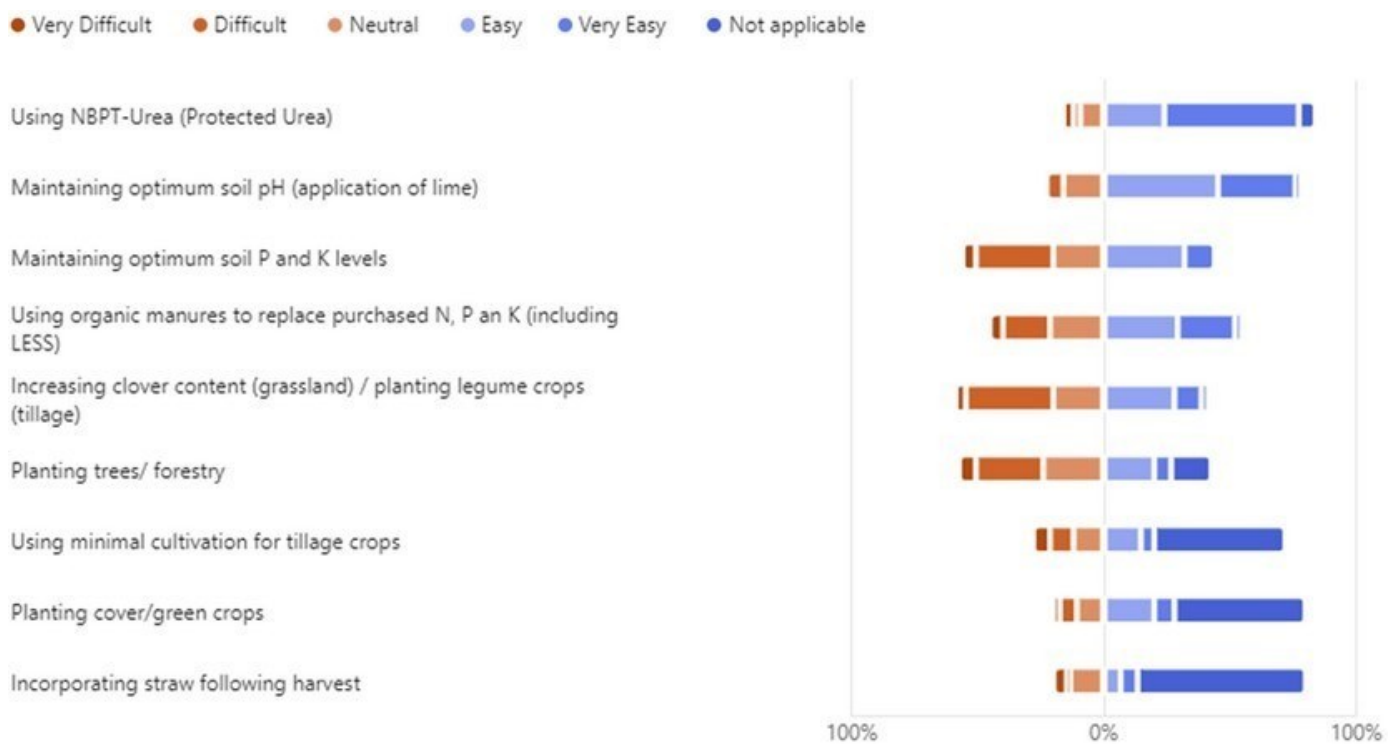


Figure 1: Ease of use of nine climate mitigation measures as ranked by Signpost Farmers (n=75, August 2024)



Figure 2. Usefulness of nine climate mitigation measures as ranked by Signpost Farmers (n=75, August 2024)

### Adoption of Climate Mitigation Measures by Signpost Farmers

In relation to the adoption of climate mitigation measures on the Signpost Farms, Tables 2 and 3 summarise the progress made in relation to four key climate mitigation measures: the usage of protected urea, lime and low emission slurry spreading (LESS) equipment and the reduction in fertiliser N usage. Data is presented for both Signpost Dairy and Cattle Farms, with figures from the Teagasc National Farm Survey for all dairy farmers and all cattle farmers included for comparison.

The Signpost Dairy and Cattle Farmers are using a higher proportion of protected urea, lime and LESS than all dairy and cattle farmers respectively. While applying higher levels of fertiliser N, the Signpost dairy farmers have reduced their fertiliser N use by a greater proportion than all dairy farmers, while both the Signpost Cattle Farmers and all cattle farmers have reduced fertiliser N usage by a similar proportion.

Table 2. Adoption of four selected climate mitigation measures by dairy Signpost Farmers and all dairy farmers

<b>Climate Mitigation Technology</b>	<b>Signpost Dairy (n = 42)</b>	<b>All Dairy Farmers (NFS)</b>
Protected Urea (% of total fertiliser N)	44% (2021)	11% (2021)
	51% (2022)	18% (2022)
	67% (2023)	27% (2023)
Fertiliser N Use (kg/ha)	201 (2021)	168 (2021)
	176 (2022)	156 (2022)
	160 (2023)	145 (2023)
Change in Fertiliser N Use (%)	-12% (2022)	-7% (2022)
	-9% (2023)	-7% (2023)
Lime Applied (tonnes/ha)	0.72 (2021)	0.55 (2021)
	0.93 (2022)	0.53 (2022)
	0.75 (2023)	0.43 (2023)
Proportion of Slurry Applied Using LESS (%)	91% (2021)	68% (2021)
	99% (2022)	77% (2022)
	100% (2023)	81% (2023)

Table 2. Adoption of four selected climate mitigation measures by cattle Signpost Farmers and all cattle farmers

<b>Climate Mitigation Technology</b>	<b>Signpost Cattle (n = 30)</b>	<b>All Cattle Farmers (NFS)</b>
Protected Urea (% of total fertiliser N)	20% (2021)	2% (2021)
	44% (2022)	5% (2022)
	53% (2023)	6% (2023)
Fertiliser N Use (kg/ha)	116 (2021)	62 (2021)
	97 (2022)	44 (2022)
	87 (2023)	43 (2023)
Change in Fertiliser N Use (%)	-16% (2022)	-29% (2022)
	-10% (2023)	-2% (2023)
Lime Applied (tonnes/ha)	0.44 (2021)	0.73 (2021)
	0.86 (2022)	0.27 (2022)
	0.64 (2023)	0.29 (2023)
Proportion of Slurry Applied Using LESS (%)	46% (2021)	24% (2021)
	79% (2022)	34% (2022)
	89% (2023)	38% (2023)

In summary, the Signpost Farms programme has made significant progress in raising the awareness of climate change as an issue for Irish farmers, of building the capacity of farmers to understand and interpret their farm's emissions profile and of increasing the usage of recognised climate mitigation measures. Through working with the Signpost Farmers, we have learnt that:

- Farmers are willing to adopt new farming practices, once they are clear on the benefits of such practices to their farm business;
- Gains (reductions in total emissions) can be counterbalanced by increased farm scale, and in some cases factors outside the farmer's control (such as weather);
- Change takes time, some solutions may require a sustained effort over many years;
- One size does not fit all – tailored, farm specific solutions are necessary; and
- Good farm data is necessary both to inform better decisions and to monitor progress made.

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