

Save money by helping to save the planet

A Climate Action Plan is saving this Cavan farmer €23,000 per year.

Owen McPartland
Teagasc, Ballyhaise.

Seamus Kearney
Teagasc, Moorepark.

Alan Clarke who farms at Killinkere, Virginia, Co Cavan, has been a Signpost Farmer since 2021. He has 153 dairy cows, 50 calves and 39 in-calf heifers on 97.1ha. The farm is in derogation and the stocking rate is just over two livestock units per hectare.

As a Signpost Farmer, Alan was one of the first farmers in Ireland to complete a climate action plan, which aims to increase farm profitability while reducing greenhouse gas (GHG) emissions. The areas addressed in the plan were fertiliser type and usage, cow performance, replacement heifer performance and improving grass-land management.

Changing fertiliser type –

• **Savings: €6,150 and a 4.4% reduction in GHG emissions.**

The lowest emitting – and cheap-



Cavan farmer Alan Clarke with Owen McPartland.

est – nitrogen fertiliser is protected urea, followed by urea and then CAN. Protected urea is low in greenhouse gas and ammonia emissions. Urea is low in greenhouse gas emissions, but high in ammonia emissions. CAN is

high in greenhouse gas emissions, but low in ammonia emissions.

To save money and reduce emissions (of both GHGs and ammonia), farmers need to switch from CAN to protected urea to reduce greenhouse gas emissions and from urea to protected urea to reduce ammonia emissions.

“We have good soil fertility,” says Alan. “And we aim to keep phosphorus (P) and potassium (K) levels at index 3, because it means we need to apply less chemical nitrogen.”

Table 1 illustrates Alan’s chemical fertiliser use for 2022. The main compound was 18:6:12 with some other fertiliser such as 0:7:30 and 10:10:20 also used.

Using 18:6:12 and 10:10:20 to build P and K levels meant that Alan applied his P and K in a more concentrated format than cut or pasture sward.

“This meant we were able to spread the remaining 72% of chemical N as protected urea and urea,” says Alan. At December 2022 prices, Alan’s fertiliser bill for the year came in at €46,569.

In 2022, Alan spread 136kg N/ha, with 72% of all N spread as protected urea or urea. “We would have used exclusively protected urea, but at times

Table 1: Scenario one - 2022 fertiliser use by Alan Clarke.

Product	Quantity Tonnes €	Kg N	Kg P	Kg K	% of N Spread
Protected urea @€1,000/t	16.65 €16,650	7,659	0		58%
Urea @€950/t	4.2 €3,990	1,932	0		14%
18:6:12 @€960/t	18.4 €17,664	3,312	1,104	2,208	25%
10:10:20 @€990/t	3.5 €3,465	350	350	700	3%
0:7:30 @€960/t	5.0 €4,800	0	350	1,500	0%
Totals	€46,569	13,253kg	1,804kg	4,408kg	100%

Table 2: Scenario two - 2022 fertiliser use spread as pasture sward and 0:7:30.

Product	Quantity Tonnes €	Kg N	Kg P	Kg K	% of N Spread
Pasture sward @€950/t	49 €46,550	13,230	1,225	2,450	100%
0:7:30 @ €960/t	6.5 €6,175	0	455	1,950	0%
Totals	€52,725	13,230kg	1,680kg	4,400kg	100%



it couldn't be got," says Alan.

In order to use the same N, P and K that was used by Alan in Table 1, 100% of the chemical N would need to be spread as pasture sward (27:2.5:5) with some 0:7:30 in order to provide the same N, P and K as nutrients.

The fertiliser needed as pasture sward and 0:7:30 is shown in Table 2. This fertiliser combination (scenario two) come in at €52,725 for 2022 – that's €6,150 more expensive!

Reducing fertiliser use –

- Saved €3,000 and achieved a 0.2% reduction in GHG emissions.

Alan reduced his chemical N use by 9% from 150kg N/ha in 2021 to 136kg N/ha in 2022.

"The reduction was driven primarily by fertiliser prices," says Alan. "We achieved it without losing forage output by raising soil pH, improving P and K levels and incorporating clover where possible."

For clover to establish, soil pH should be greater than 6.5 and P and K levels need to be at index 3. Alan has successfully incorporated clover into 17% of the whole farm through reseeded.

"We reduced chemical N fertiliser applications on these clover fields," says Alan. "Fortunately, all of our fields are above pH 6.2 and don't require lime for grassland."

In Alan's case, the 14kg N/ha reduction totals an overall reduction of 1,359kg of chemical N, or the equivalent of 3t of protected urea, saving €3,000 compared to 2021.

Improving cow performance by 30kg milk solids per cow

- Saved €10,500 in additional costs.

In 2020, Alan's herd delivered 459kg of milk solids per cow. In 2022, they each delivered 489kg (with an average of 146 cows milked). The extra 30kg/head has come from improved genetics and grassland management.

"In 2022, we milked an average of 146 cows delivering 71,450kg of milk solids," adds Alan. "At 2020 milk yields, we would have needed 156 cows to produce the same amount of milk output."

Improving milk solids per cow saved Alan from having to milk 10 extra cows in 2022 to deliver 71,450kg of milk solids. From 2021 Profit Monitor figures, it costs about €1,050 in variable costs to maintain a dairy cow. The total variable costs saved by milking 10 fewer cows to produce the same output is €10,500.

Alan's overall cow numbers in 2022 were 10 higher than what he milked in 2020. This meant that his GHG emissions associated with dairy cows were actually higher in 2022 than 2020, albeit with much higher production.

Improving heifer performance by calving at 22 to 26 months of age

- Saved €2,700 and a 2.5% reduction in GHG emissions.

For 2020 to 2022, 100% of Alan's heifers calved at 22 to 26 months. The national figure for dairy heifers is just 75%. So, one in four heifers are not meeting this goal.

If Alan was at the national average figure he would have 10 heifers calving up to six months later than currently. This would mean carrying the equivalent of five extra livestock units at an extra variable cost of €2,700 (€540/LU for five livestock units).

Improving grassland management

- Saved €790 and a 0.5% reduction in GHG emissions.

Alan has extended his full-time grazing by three days. "Cows go out part-time (by day) in early March and graze part-time into the second week of November," says Alan. "As each day at grass is worth €1.80 per cow in autumn, the three extra days at grass full-time was worth €790 to me."

How do you create a Climate Action Plan for your farm?

You can avail of the new Teagasc Signpost Advisory Programme to create a climate action plan for your farm. This programme is free and is available to all farmers. The aim of the programme is to improve your farm sustainability, reduce GHG emissions and enhance the environment.

To book your place on this free programme, contact your local Teagasc office or sign up today by scanning this QR code and following the links provided.



Table 3: Soil fertility status for Alan Clarke's farm.

Soil pH	%	P Index	%	K Index	%
<6.2	0%	1 & 2	61	1 & 2	28
6.2 to 6.5	8%	3	35	3	29
>6.5	92%	4	4	4	43

Table 4: Full-time grazing dates For 2022 and 2020 for dairy cows.

Days at Grass	2022	2020
Date out full time	28th March	28th March
Date in full time	20th October	17th October
Days grazing	207	204