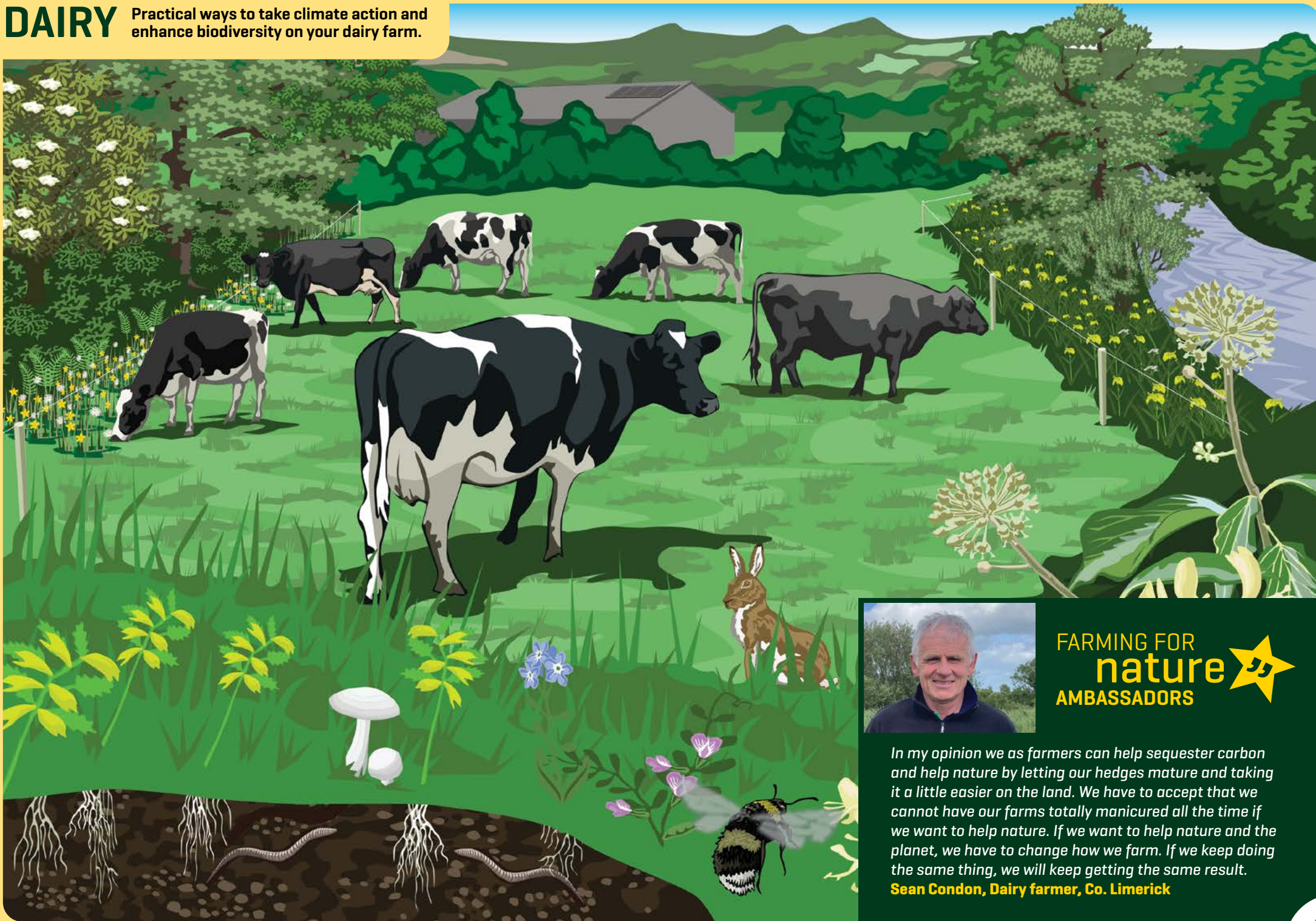




FARMING FOR
nature
AMBASSADORS

In my opinion we as farmers can help sequester carbon and help nature by letting our hedges mature and taking it a little easier on the land. We have to accept that we cannot have our farms totally manicured all the time if we want to help nature. If we want to help nature and the planet, we have to change how we farm. If we keep doing the same thing, we will keep getting the same result.

Sean Condon, Dairy farmer, Co. Limerick



Nutrient and pasture management

Slurry and fertilisers release harmful greenhouse gases.

The manufacture of chemical fertilisers generates ~1.4% of all carbon dioxide emissions and the application of both slurry and fertilisers releases nitrous oxide, a gas with 300 times the global warming potential of carbon dioxide. A nutrient management plan can help you to reduce your use of these inputs by improving their efficiency.

- Treat your slurry with respect! – slurry is an increasingly valuable farm asset, don't waste it
- Retain, enhance and create buffer strips and hedgerows to help prevent nutrient run-off
- Maximise nutrient uptake by crops by maintaining optimum soil pH
- Measure grass to identify fields that don't need fertilising
- There is a slurry storage deficit on ~40% of Irish farms. Could a slight reduction in stocking rate take the pressure off in terms of slurry storage?
- Where possible, use low emissions slurry spreading
- To maximise nutrient absorption, spread fertiliser, slurry and farmyard manure on warmer days (soil temp at least 6°C) and don't spread slurry out of season!
- Include nitrogen fixing legumes in swards or feed crops (e.g. clover, vetch, beans)
- Switch to using protected urea (rather than CAN)
- Try simple mobile phone operated GPSs and tractor sensors to maximise nutrient uptake through more targeted spreading
- Improve drainage, drought tolerance and animal performance by planting species-rich (multispecies) swards
- Enhance or retain sward diversity by reducing grassland management intensity (reduce the use of chemical inputs) and avoid reseeding old permanent pasture
- Maintain clover in the sward to increase dry matter production, improve milk yields and naturally fix nitrogen. Remember – chemical nitrogen inhibits the growth of clover

Co-benefits for farmers

- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)
- Decreased vulnerability to market forces (greater resilience)



Soil

Healthy soils store carbon.

Reduce inputs and prolong the grazing season by caring for your soil – it's your greatest asset!

- Keep your soil aerated by avoiding poaching and compaction by heavy machinery.
- Increase soil carbon and the population of earthworms, microbes and mycelia (naturally occurring fungal hyphae that boost soil fertility) by minimising inversion ploughing (e.g. when reseeding) and the use of chemical inputs.
- Protect your soils from erosion – don't leave soil uncovered, particularly over winter.
- Naturally fix nitrogen and improve drainage and drought tolerance by planting species-rich swards
- Allow sward diversity to develop naturally by reducing grassland management intensity (reduce fertilising/spraying) and avoiding overgrazing (particular in May/June when meadows are flowering)
- Keep your soil aerated by avoiding compaction by heavy machinery, poaching and pinch points
- Retain maximum soil carbon by minimising ploughing and reseeds
- Maximise the grazing season to minimise the need for imported feed – feed and silage production makes up 14% of emissions from the dairy sector and our use of soya based feeds is contributing to rapid destruction of the rainforest in Brazil



Co-benefits for farmers

Healthy soil:

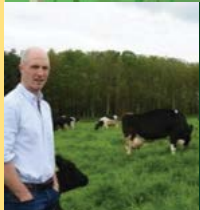
- Increases yields
- Has a higher level of available nutrients for forage crops (meaning less fertiliser is used)
- Is easier to cultivate (meaning less diesel is used)
- Retains more moisture (making crops more drought tolerant)
- Drains better (making land more flood resistant)
- Supports more soil microbes (which in turn store more carbon and lead to even healthier soils)



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We soil sample every two years. This gives us a better idea of soil fertility, and allows us to make better decisions on what we can apply to the land.

**Gearoid Maher, Dairy farmer,
Co. Limerick**



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We don't cut any of our hedgerows as we get no financial return for it, on the flip side of this there is a huge benefit for biodiversity. We plant trees every year as a way of increasing the amount of shelter for livestock.

Gearoid Maher, Dairy farmer, Co. Limerick



Trees, scrub & hedgerows

Woody vegetation captures and stores carbon.

- Retain, enhance or create woodland areas, copses and scrubland
- Allow for natural regeneration of trees and scrub in less productive areas
- Plant native hedgerows
- Allow existing hedgerows to grow both tall and wide
- Experiment with agroforestry/ silvopasture to build a climate resilient farm system
- Diversify farm enterprises by planting a native woodland (or better yet, allow one to naturally regenerate!)

Co-benefits for farmers

In a dairy farming system woody vegetation can:

- Provide diverse grazing
- Provide shade & shelter
- Improve animal welfare
- Enhance biodiversity
- Diversify farm enterprises



Water management

Our water bodies (rivers, lakes and oceans) naturally work together to support biodiversity and to store carbon.

When water bodies are polluted, these systems break down. Almost half of Irish surface waters are not in good health and the situation is deteriorating. Help to restore our water bodies by eliminating harmful farm run-off:

- Treat your chemicals with respect – just one drop of pesticide can pollute a small stream for over 30kms!
- Reduce herbicide use by using alternative methods of weed control e.g. non-synthetic herbicides and diverse crop rotations. As many synthetic herbicides are water soluble (e.g. MCPA, 2,4-D), it is almost impossible to ensure they do not end up in watercourses after application!
- Watch out for leakage from bale or pit storage areas and clean up fallen or waste silage and store with farmyard manure – silage effluent is a potent pollutant!
- Could you list the potential sources of run-off from your farm and how you might eliminate them? Some of these (e.g. slurry, herbicides) are more obvious than others (e.g. spoil from tractor tyres, washings or waste silage)
- To reduce nutrient run-off from pasture: plant buffer strips, field margins and hedgerows to slow the flow of nutrients, and retain, enhance or create wetlands to soak up and filter run-off after heavy rain
- Keep clean run-off (e.g. from shed roofs and clean paved areas) separate from soiled water, parlour washings and slurry
- Spread soiled water in dry fields far from water-courses
- Never spread or spray inputs when rain is due!
- Protect your water bodies from grazing livestock: fence livestock well back from watercourses; don't allow stock to drink directly from rivers; avoid poaching and pinch points

Co-benefits for farmers

- Reduced input, labour, fuel and machinery costs
- Cleaner water and improved health – research has detected herbicides in 38% of drinking water wells tested in Ireland!



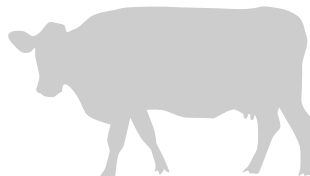
Energy & fuel

Maximise energy efficiency and reduce fossil fuels to minimise your carbon footprint!

- Milk cooling accounts for one third of energy usage on dairy farms while heating water accounts for one fifth! Installing a heat recovery unit on the bulk tank can help address both issues, reducing energy use for cooling milk by 50%
- Don't waste heat! Look into a TAMS grant to install a solar thermal system to heat water and ensure your water heater and the first six metres of pipe running from the heater are well insulated
- Have you looked into renewable energy? A shed roof can be the ideal place to install solar panels for electricity and there are TAMS grants available
- Use machinery (diesel!) efficiently – check tyre pressure regularly, remove unnecessary tractor weights and don't let engines run idle
- Switch to LED lighting and turn off lights when not in use
- Vacuum pumps account for a fifth of energy usage on dairy farms; variable speed vacuum pumps can reduce this energy usage by 60%
- Consider using solar water pumps – the technology and cost has greatly improved in recent years
- Repair any leaky pipes or troughs. Over 43% of treated drinking water in Ireland is lost to leaks!
- Could you harvest rainwater from buildings? Using this 'grey water' could save money and energy
- Minimise the use of chemical fertilisers, herbicides and pesticides – these are all manufactured using fossil fuels
- Can you produce more of your own inputs on farm? For example, growing your own feed crops can reduce emissions from the transport of feed grown elsewhere (e.g. Brazil!)
- Plastics are produced using fossil fuels – choose suppliers that minimise the use of plastic packaging and try to avoid using single-use plastic products around the farm

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience
- Supports more soil microbes (which in turn store more carbon and lead to even healthier soils)



Curious?

Have you run the numbers for reduced stocking rates or going organic?

Reduced stocking rates

Methane is by far the greatest contributor to emissions in the dairy sector (~65% of all emissions). Eighty-five per cent of this comes from the cow's rumen, while 15% comes from slurry storage and spreading. Considering the rising costs of fertiliser and slurry storage, coupled with the new direction of farm payments under CAP 2023-27, could it make financial as well as climate sense to start to reduce methane by reducing stocking rates?

Going organic

Have you run the numbers for going organic? New supports and a growing market for organic dairy products are making this an increasingly attractive option for dairy farmers.

If you are running the numbers for reduced stocking rates, don't forget to factor in reductions in your own labour time!

Nature co-benefits

Dairy farm climate action can benefit nature by creating:

- More species-rich pasture, supporting native fungi, insects, birds, mammals and more!
- Healthier rivers, lakes, estuaries and oceans, rich with life
- Habitat for our native species to feed and breed
- Nature-rich farms – loud with humming insects and singing birds
- A model for other dairy farmers; when we experience nature on another farm we are more likely to want to protect it on our own!

Nothing beats nature for providing natural climate change adaptation and mitigation. Boosting biodiversity, from the soil to the treetops, will help your farming system to remain productive and resilient in the face of increasingly unpredictable weather events.





GEAROID MAHER is a dairy farmer and FFN Ambassador. Gearoid, together with his wife Sarah and young daughter Sally-Kate, produces both great dairy produce and diverse habitats for wildlife on his farm in Co. Limerick.

Gearoid says: "On our farm we have increased the amount of clover and reduced our chemical nitrogen usage from 250kgN/ha to 100kgN/ha. We incorporated red clover into our silage fields, which in turn has eliminated the need for chemical nitrogen.

[...] a few simple tips that help the environment and increase profit for the farmer. On my farm I saw:

LIME

- Research shows that liming acidic soils increases grass production by 1t DM/ha
- On a drystock farm this value is €105/t DM and €180/t DM on a dairy farm
- An application of 5t/ha of ground limestone represents a cost of €25/ha/year over 5 years. The ROI from lime gives €4 to €7 worth extra grass for every €1 invested in lime

CLOVER

Benefits for the Farmer

- Increase farm profit by €150/ha [N saving]
- Increase profit by €300 [Extra milk solids]
- More output
- Less cost

Benefits for the animals

- Increased DM intake: + 1.5 kg DM/cow/day
- Increased Kg MS: + 30 kg MS/cow/year
- Diversity in diet

Benefits for the Sward

- Increased DM production +800 kg DM/ha
- Potential to reduce nitrogen fertiliser with white clover contents >25%

Benefits for the Environment

- More biodiversity
- Less Chemical N [up to 100 kg N/ha]
- Increase NUE [up to 58% NUE]
- 32% clover content = 10% less GHG

We do a nutrient management plan every year. This identifies what we need to apply and where we need to apply it. By doing this it eliminates the overuse of nutrients which in turn has a huge beneficial impact on soil health and water quality [...]

Measuring grass identifies how much grass is growing on a weekly basis. This ensures there is high quality available for the cows. Better quality grass produces higher milk solids and cows produce less methane from high quality grass. The better quality grass has reduced our concentrate feed usage from 1200kgs to 700kgs. Also measuring grass identifies fields that may need nitrogen or not. During the summer months a lot of organic nitrogen is released from the soil, which eliminates the need for chemical nitrogen, but you can't put a measure on this free nitrogen unless you are measuring grass ..."



JOHN McHUGH is a organic dairy and beef farmer & FFN Ambassador, creating both great produce and diverse habitats on his farm in Co. Laois.

John says:

"1. Productivity is output per unit input. The more I learned about the true cost of the inputs I used, the more I realised how unproductive I was. That's why I farm with nature.

2. I used to farm with a big focus on maximising profit. Plans were generally made assuming the best [weather, government policy, animal and crop health, farmer and family health etc]. It left a lot of room for things to go wrong. I now farm for resilience and I have found that resilience comes through working with nature. This makes

it more likely that I will be profitable in the good years and the bad and farming is a lot more enjoyable as a result.

3. As my profitability became more dependent on fertilisers, pesticides, bought in concentrates, bought in labour, bank debt, merchant credit, expensive and increasingly short-lived technology the more vulnerable I became, the less enjoyable farming became and the more nature suffered. Now I'm linking my profitability to nature, the more I find ways to work within her boundaries the more I profit from her bounties!

4. I think most farmers underestimate the scope to reduce costs and remain profitable by farming with nature. It's not a blueprint that is encouraged by the industry. I think it's time that farmers stopped farming for the industry and start farming for our own, our families and our communities wellbeing and that will see us looking back to nature.

It's all about connection, connection of trees, wildlife, butterflies, but the connection with people as well"