Practical ways to take climate action and enhance biodiversity on your farm

As farmers, we have a key role to play in climate action. Simple changes can make a big difference to the climate, while often also benefitting us all.

Some of our Farming for Nature Ambassadors and where they are located.

A few years ago, a small project* was launched which set out to highlight the positive role that farmers can, and do, play in looking after our countryside while making a living for their families. This was to counter the negative narrative around the interaction between farming and the environment and to show that, with the right support and resources, farmers can be major contributors of solutions to our climate and biodiversity crises.

This small project has grown into a vibrant national network of over eighty 'farming for nature' ambassadors – from beef, dairy, arable, horticulture and other sectors: farmers big and small, organic and conventional, male and female. It has also inspired similar farmer-centred networks across Europe.

These ambassadors are living proof of how farmers can make a positive difference for nature in their daily working lives, and that such farming systems can be agriculturally, economically and socially progressive and sustainable. They are a huge learning resource, full of innovative ideas and practical experience, accumulated over many years – often generations - on the ground. They are also passionate and eloquent spokespeople for Irish farming. In a time of growing global crises, the sustainability challenge of meeting our current needs, while not compromising the needs of future generations, can seem insurmountable. While strategies, plans and targets continue to be debated and developed, these farmers are demonstrating real solutions, day-in day-out!

In these pages, we will bring you some practical ideas from these farmers and others on how - and why - they do what they do: produce great food, look after their farm environment, make a decent living for their families and support their local communities.

To turn the tide on climate change and biodiversity decline we must act urgently; we hope that these tips will support you in your farming for nature journey!

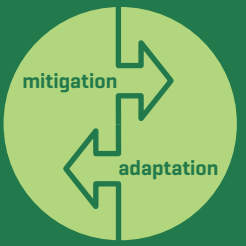
** Farming for Nature is an independent non-profit project funded by DAFM, NPWS and Bord Bia. It was inspired by the farmers of Ireland and their work in looking after their farms and the natural and cultural heritage within them.*

What is the greenhouse effect and why is it important?

Greenhouse gases (GHGs; e.g. methane, carbon dioxide and nitrous oxide) are natural gases that, when released into the atmosphere, trap heat. Our planet has natural ways of removing GHGs from the atmosphere, for example trapping and storing carbon in healthy soils, trees, and oceans. However, when more GHGs are released into the atmosphere than can be captured by the planet's natural systems, they build up and form a heat-trapping layer (like a greenhouse) around the planet. This greenhouse effect is destabilizing weather patterns - causing increased droughts, storms and floods and threatening food and water security.

The solution remains simple: we need to reduce the flow of GHGs into the atmosphere and increase the sinks that store these gases. With emissions from agriculture in Ireland rapidly rising (there was an increase of ~20% in the last decade and 3% in 2021 alone), we have an urgent responsibility to cut on-farm emissions and restore healthy natural carbon storage cycles on Irish farmland.

Climate mitigation or adaptation?



The kinds of actions we can take to protect our farms and livelihoods from climate change naturally fall under two headings: climate mitigation and climate adaptation.

Climate mitigation is concerned with reducing the amount of heat-trapping greenhouse gases (GHGs) in the atmosphere. On-farm this can be achieved both by reducing emissions (e.g. by limiting the use of fossil fuels) and by increasing carbon capture and storage (e.g. by managing healthy soils and hedgerows). Climate mitigation actions are crucial if we are to slow the current rate of global warming.

Climate adaptation, on the other hand, can be understood as the actions we can take to make our farms more resilient to the changing weather patterns associated with climate change (e.g. increased droughts and floods). Luckily, many on-farm climate adaptation strategies are also climate mitigation strategies. For example, promoting the health of soils, woodland and water systems can both reduce the impacts of droughts and floods (adaptation) and help to capture and store more carbon (mitigation).

What is biodiversity and why is it important?

The term *biodiversity* describes all life on earth: it encapsulates all of the variation in plants, animals, fungi and microorganisms on our planet. This incredible web of life is complex and interdependent, meaning that damaging one thread can have a ripple effect across entire ecosystems.

As humans, we are part of nature and part of biodiversity. Likewise, biodiversity is crucial to our:

- **Food security (pollination; crop genetic diversity; resistance to disease; nutrition)**
- **Health (clean air and water; medicines; wellbeing)**
- **Nature-based solutions to climate change mitigation (carbon capture and storage) and adaptation (resilience to floods and droughts)**
- **Economic stability (livelihoods and job creation; resistance to shocks e.g. disease/extreme weather events)**

However, as a result of changes in the way we as humans use the land, biodiversity is declining at rates that are unprecedented in human history. In response, the Irish government has declared a 'biodiversity emergency'. With agriculture comprising the majority of land-use in Ireland (>65%), we have an urgent responsibility to address biodiversity loss by making more space for nature on our farms. The good news is, when given a chance, nature can and does bounce back!

Farming for nature can result in many 'co-benefits' for the farmer, for example:

- Access to new markets & farm payments
- Decreased reliance on expensive inputs
- Increased self-sufficiency and long-term resilience
- Improved health and well-being
- A general feel-good factor!
- Less work – let nature do the heavy lifting for you!

FARMING FOR nature AMBASSADORS

We find that the things we do on the farm for "nature" are generally good for us too - adding space for wildlife and diversity. Sometimes those things even help you to look at the big picture - be patient and think about the landscape in a longer timeframe, and be happy that someone in the future will be able to appreciate what we do now.
Fergal Anderson, Horticulturalist, Co. Galway

Start by making peace with nature. In doing that I gained a tremendous ally ... I let the weed re-balance my depleted soils, I let the hedge provide shelter for the storms to come, I let the scrub buffer the extremes of drought and flood.
John McHugh, Dairy farmer, Co. Laois

CLIVE BRIGHT is an holistic beef farmer and FFN ambassador who is creating great food and habitats in Co. Sligo

Clive says: *"Farming for nature need not be altruistic; after all, the first person to benefit from increased organic matter or soil carbon is the farmer themselves. Managing to build soil carbon improves the soil's porosity so it can receive water but also gives it the capacity to store that water - creating resilience in both wet and dry weather and allowing for increased fertility and a prolonged growing season.*

We often talk of creating habitat for wildlife; how about we reframe it and create a habitat for livestock? Livestock are more productive and healthier in the shelter of trees, and ecological diversity creates resilience and allows space for nature to do the heavy lifting. Where nature thrives is a great place for a cow to live!"

FARMING FOR nature
AMBASSADORS

Climate change mitigation and farming for nature go hand in hand - what benefits one is good for the other. It is very often a case of achieving better outcomes with less effort, providing you know what you are doing.
Andrew Bergin, Tillage farmer, Co. Kildare

Managing for more diversity is the key to climate resilience."
Clive Bright, Beef farmer, Co. Sligo

The co-benefits of taking action for climate and nature

Climate actions can create more space for nature and biodiversity. Biodiversity, in turn, can help to repair and maintain natural cycles of nutrient, water and carbon storage on your farm, providing additional (and free!) climate mitigation and adaptation services!

On-farm climate action can benefit nature by creating:

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

FARMING FOR nature
AMBASSADORS

Actions can start with very small steps and work best when built gradually by the farmers as they learn what works well for them and for their farms. And be prepared to accept an odd mistake along the way - you won't find a prince without kissing a few frogs.
Andrew Bergin, Tillage farmer, Co. Kildare

The following pages contain tips drawn from farmers' experiences of experimenting with innovative ways to create resilient, profitable and nature and climate-friendly farming systems in Ireland. As with all suggestions concerning farming and nature, circumstances will change from field to field and farm to farm so it's not possible – or wise - to be too prescriptive. We always recommend that you begin by looking after, and ideally enhancing, what you already have in terms of habitats and species, giving nature the chance to do the 'heavy lifting' so to speak. Where this isn't possible and you want to create new habitats or change your farming system, it's best to proceed with some degree of caution (and consultation), observe the impact, and respond accordingly. And be patient, change does take time! Best of luck on your farming for nature journey!

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It is time to transition our farms and support them in adapting to the challenges they face. This means improving their ability to make a sustainable living, while also playing an active role in mitigating some of the impacts of climate change on our food sovereignty, biodiversity and the natural environment.
Thomas & Claire O'Connor, Horticulturalists, Co. Kerry

Where to start?

On a quieter day, schedule in some time to simply walk the farm. Try and look at your farm with fresh eyes, or better yet, ask a family member, friend or colleague to join you for a walk (children are particularly good at this!) and consider the following:

1 How healthy is my soil? Will it still be healthy in ten, twenty or thirty years?

2 Which areas of the farm are productive versus unproductive?

3 Could unproductive areas be used to make more space for nature and unlock some financial supports in doing so?

4 What current farm inputs have a high carbon footprint (fuel, fertiliser, feed)?

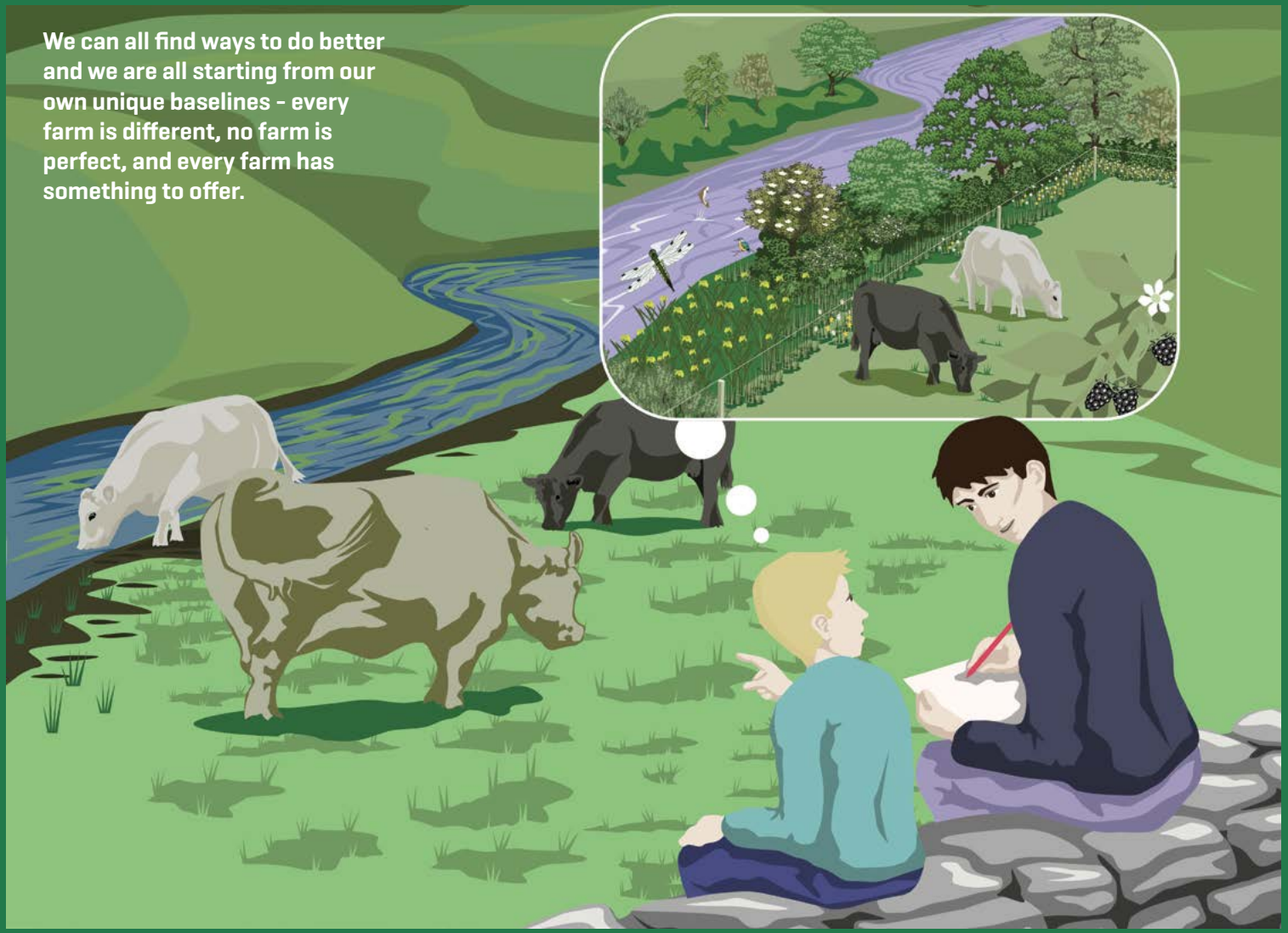
5 How does water work on my farm? Track the inflows, usage, wastage and outflows. Are my soils or farm inputs escaping into watercourses, depleting my farm's soil health or water quality?

6 Why have I chosen the current stocking rate or crop rotation?

7 What is my nutrient management plan?

8 Am I making the most efficient use of farm inputs? Are fertiliser, farmyard manure, herbicides or other inputs used only where needed, is there any wastage?

9 Am I making use of new research and innovations to reduce my carbon footprint?



We can all find ways to do better and we are all starting from our own unique baselines - every farm is different, no farm is perfect, and every farm has something to offer.

10 What waste products does my farm produce?

11 What is unique or special about my farm?

12 What is the impact of my farm on the surrounding countryside?

13 In what condition would I like to pass the farm on to the next generation? Is there more or less nature on my farm than there used to be? If farming for climate and nature pay better in future, is my farm well positioned to benefit?

The following pages contain farmer's tips to help you find simple ways to improve upon these baselines.

DAIRY

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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

DAIRY

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

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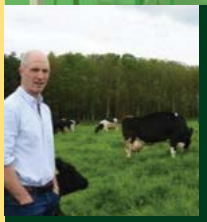
We soil sample every two years. This gives us a better idea of soil fertility, and allows us to make better decisions on what we can apply to the land.
Gearoid Maher, Dairy farmer, Co. Limerick

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)

DAIRY



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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!

DAIRY

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 5years. 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.

Its all about connection, connection of trees, wildlife, butterflies, but the connection with people as well"

TILLAGE

FARMING FOR nature
AMBASSADORS

Climate change mitigation and farming for nature go hand in hand - what benefits one is good for the other. It is very often a case of achieving better outcomes with less effort, providing you know what you are doing. Low disturbance crop establishment for instance ticks an awful lot of the boxes; less fuel and metal is used as well as protecting soil biology and retaining organic matter. Reducing hedge cutting to once every few years does very little harm to crops, has big benefits for insects and birds and involves less effort and expense. There are many more examples of an informed neglect of the farm being good for farmer, farm, nature and climate.

Andrew Bergin, Tillage farmer, Co. Kildare

TILLAGE

Soil

Healthy soils store carbon.

Don't treat your soil like dirt! Healthier soil can increase yields, retain more moisture, store more carbon and support more biodiversity!

- Maintain aerated soils by avoiding compaction from increasingly heavy farm machinery
- Capture and store maximum soil carbon by minimising inversion ploughing – try min-till where possible
- Compost your vegetative waste! – check out the many online videos to learn how to make nutrient dense compost fertiliser
- Diverse rotations are key to soil health – try catch, combi, cover, and double-cover crops in your rotations
- Consider cultivating in spring rather than autumn
- Build soil fertility and store carbon by keeping soil covered - try catch and cover crops and green manures and don't leave soil exposed!
- Increase organic material by adding farmyard manure and crop residues to your soil
- A single cubic inch of soil can contain eight miles of mycelia – naturally occurring fungal hyphae that boost soil fertility. Allow these engines of growth to work for you by avoiding fungicides where possible
- Try biostimulants and nature-friendly inoculants (e.g. vermi-liquid or compost fertiliser) instead of chemical seed and soil treatments
- Experiment with soil building techniques from regenerative farming, permaculture, organic farming, or Korean Natural Farming
- Get to know your soil! Discover more about your own soil by exploring apps and online resources, or by digging some holes!

Co-benefits for farmers

Healthy soil:

- Increases yields
- Has a higher level of available nutrients for 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!)

FARMING FOR nature AMBASSADORS

One of the easiest actions we have taken was to simply grow a covercrop. By simply planting a covercrop you will:

- *Improve water filtration and percolation*
- *Mop up any available nutrients*
- *Keep live roots in the ground*
- *Improve water quality*
- *Make your soil more friable (important (for) till or no-till as it will reduce metal ware and diesel consumption)*
- *Keep your soil open and reduce compaction*
- *Improve microbial life which will cycle locked up nutrients*
- *Create more habitats and food for ground nesting birds and also mice and frogs for foxes, badgers, owls and birds, etc.*

Another simple measure we have implemented to support nature is rotational hedge cutting. Cutting every second year and letting the hedges grow higher has proven successful in creating habitat and shelter areas.
Norman Dunne, Tillage farmer, Co. Meath

Trees, scrub & hedgerows

Woody vegetation captures carbon.

- Allow natural regeneration of trees and scrub in less productive areas or difficult corners
- Plant diverse native hedgerows
- Allow existing hedgerows to grow tall and wide
- Diversify farm enterprises by planting a native woodland
- Retain existing hedgerows, woodland, copses and scrub

Co-benefits for farmers

- Shelter-belts for crops
- Habitat for beneficial predatory insects
- Better-connected and richer wildlife habitats
- Improved drainage and water quality
- Reduced soil erosion

TILLAGE

FARMING FOR nature AMBASSADORS

We have found that with the cover crops when we still plough the seagulls follow the plough yet where there was only stubble the seagulls won't follow the plough as there aren't the same number of worms. The cover crop benefit follows through to the yield of the spring crop which is improved including getting to graze the cover crop with sheep.

Maurice Deasy, Arable Farmer, Co. Tipperary

Nutrient management

The manufacture of chemical fertilisers generates ~1.4% of all carbon dioxide emissions. Furthermore, the application of fertilisers releases nitrous oxide, a gas with 300 times the global warming potential of carbon dioxide.

Reduce use by increasing efficiency:

- Maximise nutrient uptake by crops by maintaining optimum soil pH
- Choose crops that require fewer chemical treatments and are naturally resilient to climate change (e.g. more extreme droughts, floods or winds)
- Build fertility using catch crops, cover crops and green manures
- Spread fertiliser on warmer days (soil temp at least 6°C) to maximise absorption
- Include nitrogen fixing legumes in your crop rotations (e.g. peas, vetch, beans)
- Try simple mobile phone operated GPSs and tractor sensors to ensure more targeted use of inputs
- Explore alternatives to chemical fertilisers (e.g. compost, organic manures)

Co-benefits for farmers

- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)
- Improved soil fertility (increased yields and climate resilience)
- Greater resilience to both shifts in market forces (less reliance on expensive external inputs) and to extreme weather events (e.g. droughts and floods)

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 extreme care – just one drop of pesticide can pollute a small stream for over 30kms! Reduce the need for pesticides by boosting populations of predatory insects: create or enhance hedgerows and field margins as habitats for predatory insects (e.g. ladybirds and spiders). These will move onto the crop in spring, naturally reducing the pest burden
- Reduce herbicide use by using alternative methods of weed control e.g. non-synthetic herbicides, mulching 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!
- Reduce run-off from fields by slowing the flow of surface water: plant buffer strips, field margins and native hedgerows; never spread or spray when rain is due
- List the potential sources of run-off from your farm and how you might eliminate them. Some of these (e.g. herbicides, pesticides, fungicides) are more obvious than others (e.g. spoil from tractor tyres, washings or sediment from soil erosion)
- Eliminate costly waste - use fertilisers, herbicides, pesticides, fungicides, molluscicides and chemical seed treatments only where needed
- Every drop counts! – Treat any spray residue from washings, tanks and storage containers with respect

Co-benefits for farmers

- Reduced input, labour, fuel and machinery costs
- Cleaner water - research has detected herbicides in 38% of drinking water wells tested in Ireland!
- A healthier working environment for the farmer, the farm family, the local community and for future generations!

TILLAGE

Energy & fuel

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

- Turn the engine off rather than letting it idle
- Shift up a gear and throttle back for lighter work or on the road
- Remove unnecessary tractor weights – doing so can save over one litre of diesel/hr!
- Check tyre pressure regularly (lowering pressures for field work will reduce fuel use)
- Mend leaky pipes, troughs or taps - drinking water production and supply requires energy yet >43% of treated drinking water in Ireland is lost to leaks!
- Consider installing renewable energy sources. A shed roof can be the ideal place to install solar panels and supports are increasingly available
- Reduce the use of plastics, fertilisers, herbicides and pesticides, which are all manufactured using fossil fuel based products
- Consider using solar water pumps - the technology and cost has greatly improved in recent years
- Heat pumps can be a good alternative to fossil fuel based heating systems
- Take care when opting for 'degradable plastics' - many products will leave plastic residues in your soil
- Cut down route-to-market costs by selling direct to consumer and transport emissions by selling locally where possible
- Minimise food waste and make sure to compost any vegetative waste – it's a valuable resource!
- Harvest water from buildings – using this 'grey water' to grow crops can save money and energy

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience

Curious?

Have you run the numbers for going organic?

Have you run the numbers for going partly or fully organic? New supports, lower input costs, and a growing market are making this an increasingly attractive and more climate-friendly option for tillage farmers.

Nature co-benefits

Climate action on tillage farms can benefit nature by creating:

- More species-rich and diverse landscapes, 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 tillage 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.

FARMING FOR nature AMBASSADORS

You can't go green if you end up in the red but farming for nature can improve your income as well as the environment. Switching from conventional crop establishment to a no-till system brings big savings in machinery costs but the time I don't spend on the seat of a tractor needs to be spent looking after my soil if the system is going to work. And that care for the soil can also bring savings as the amount of fertilisers and pesticides used will reduce as soil health improves. Done properly, this system gives me the same average yields at lower cost. I don't work harder, just differently.
Andrew Bergin, Tillage farmer, Co. Kildare

Any commercial farmer wishing to remain profitable has to get an understanding of the restrictions that are coming down the track. This will require them to familiarise themselves with the role balanced plant nutrition plays in reducing artificial fertiliser and pesticides use.
Colm Flynn, Tillage farmer, Co. Kildare

It can be very hard to realistically pinpoint how much difference there is economically because while there are savings e.g. direct drilling vs ploughing there can be yield penalties for a few years. So I would rather look at it over a longer period of time and how building healthy soils will have a long term effect on margin and environmental impact. This doesn't happen overnight (...). I am confident that in the long term it's better in every way.
Mervyn Aughmuty, Tillage farmer, Co. Roscommon

FARMING FOR nature
AMBASSADORS

Viewing the farm through basic ecological processes: water cycle, mineral cycle, energy flow, and community dynamics, is a fantastic way to shift your thinking towards farming with nature and low energy productivity. For example, increasing the number of green leaves photosynthesising on a given acre increases the amount of sunlight harnessed and therefore increases the "energy flow". This will enhance the mineral cycle and improve soil structure, restoring the water cycle. The best way to maximise the number of green leaves is [through] "community dynamics" – [creating] denser swards with many different leaf shapes of different ages, filling different niches within the pasture. Above the pasture, there is potential for another canopy level with hedges and trees of different sizes and ages that will capture more sunlight, again increasing mineral cycles and improving the water cycle...

Clive Bright, Beef farmer, Co. Sligo

Nutrient 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 (and their associated costs) by improving the efficiency of their use and absorption.

- 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 absorption 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 numbers 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

Co-benefits for farmers

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

FARMING FOR nature AMBASSADORS

We have found that regenerative grazing practices have shown improvement in the soil and its fungal network in a just a couple of seasons. Furthermore, by leaving branches, old logs and sticks laid into the base of a hedge (they) provide nesting cover for birds, protect saplings and rot down to feed soil. We take wood from coppiced or pollarded (coppiced above browse height to allow regrowth when stock have access) broadleaved trees as it is a long-term sustainable source of fuel (firewood), fodder (stock love tree leaves) and bedding/mulch (woodchip).
Paul McCormick & Jacinta French, Beef & agroforestry farmers, Co. Cork

We found the main key solution for nature restoration on our farm is habitat-adapted suckler cows. Using Galloway cows, we practice the following grazing hierarchy on the Omega Beef farm; precision, strategic, targeted and extensive grazing. Empirical evidence has shown that this type of grazing delivers not just for nature and soil restoration but also for climate and food security.
Joe Condon, Beef farmer, Co. Tipperary

Pastures & soil

Healthy soil stores carbon and maximises the grazing season

Feeding (silage and concentrates) and housing livestock generates significantly higher emissions than keeping livestock at pasture. To maintain healthy soil and maximise the grazing season:

- 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 (fertilising/spraying) and by avoiding overgrazing (especially 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 – our use of soya based feeds is contributing to rapid destruction of the rainforest in Brazil
- Consider habitat adapted native or traditional breeds (e.g. Droimeann, Moiled, Kerry or Dexter cattle). These breeds are lighter on the land and require less intensive management to thrive

Co-benefits for farmers

- Reduced labour
- Reduced input costs
- Improved animal welfare
- Increased farm resilience and self-sufficiency

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:

- Retain, enhance or create wetlands, buffer strips, field margins and native hedgerows to reduce run-off
- Never spread or spray inputs when rain is due
- 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
- 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)
- Manage grazing livestock: fence livestock well back from watercourses; don't allow stock to drink

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!

Trees, scrub & hedgerows

Woody vegetation captures carbon.

- In less productive areas, allow for natural regeneration of trees and scrub
- Plant native hedgerows
- Allow existing hedgerows to grow 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!)
- Retain, enhance or create woodland areas, copses and scrubland

Co-benefits for farmers

In a beef farming system woody vegetation can:

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

FARMING FOR nature
AMBASSADORS

My top pointers to do would be to:

1. *Plant a hedge*
   - draw down the ACRES payment over 5 years,
   - hedge will allow you to get cattle/sheep out earlier in spring and leave out in autumn due to shelter benefit thus reduce slurry and feed bill.
2. *Trim hedges every 3 to 4 years on a rotational basis and reduce hedge cutting bill (60-70 euros/hour).*
3. *Plant a mix of red clover and ryegrass and get 3 cuts of top-quality silage with no nitrogen added and reduced meals to cattle.*

Stephen Morrison, Beef farmer, Co. Kildare

Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which beef farmers can minimise their carbon footprint!

- Minimise the use of chemical fertilisers, herbicides and pesticides – these are all manufactured using fossil fuels
- Have you looked into renewable energy? - a shed roof can be the ideal place to install solar panels and supports are increasingly available
- Can you produce more of your own inputs on farm? For example, growing your own feed crops reduces emissions from the transport of feed grown elsewhere (e.g. Brazil!)
- Can you mend a leaky pipe or trough? - drinking water production and supply requires energy from fossil fuels yet >43% of treated drinking water in Ireland is lost to leaks!
- If it's not in use, can you turn it off? (e.g. lights, appliances, electronics)
- 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

Bogs & uplands

Peaty soils store an incredible amount of carbon, but they are fragile - it can take ten years for a single centimetre of peat to form!

Protect peaty soils in our bogs and uplands:

- Retain (don't drain!) bogs and wetlands
- Avoid burning, extracting turf, planting forestry, or overgrazing on bogs or peat lands
- Rewet and enhance bogs and wetlands by blocking manmade drains
- Fence livestock off sections of uplands to allow for some natural regeneration – historically our uplands would have supported a mosaic of trees, shrubs and grasslands!

Co-benefits for farmers

- Flood and drought mitigation - bogs act as giant sponges, absorbing water and then slowly releasing it
- Clean water - bogs and wetlands purify water

FARMING FOR nature AMBASSADORS

Going organic works for my farm and pocket:

- *A 40 hectare organic farmer gets paid Euro11,500 per year*
- *An organic farm has priority access to Acres*
- *An organic farm is kinder to nature because organic practices nurture the soil*
- *Organic farms help against global warming because there are far less inputs in organic systems i.e. no chemical fertilisers and no pesticides*

It's worth thinking about.

Michael Hickey, Beef farmer, Co. Tipperary

On my farm I have driven down inputs, maximised subsidy and supports and pushed revenue through direct sales. As a result the farm shows a profit equivalent to the average industrial wage and is a wildlife haven and a pleasure to farm. Conversely the average drystock farm uses up part of its subsidy income to survive and involves very high time-consuming inputs leaving very little opportunity to enjoy the farm.

Pat McKenna, Beef Farmer, Co. Monaghan

Our mountain farm allows us to practice a traditional winterage system for keeping hill adapted suckler cows. This system reduces the standard cost of keeping a suckler cow by over half. The beef products derived from this system, when sold direct from farm, have marketable traits that attract a significant premium over conventional products. In my own case farming with nature has been the decisive key to the economic performance of the farm.

Joe Condon, Beef farmer, Co. Tipperary

Curious?

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

Reduced stocking rates

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

Going organic

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

Nature co-benefits

Climate action on beef farms 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 beef 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.

FARMING FOR nature AMBASSADORS

Over the last 2 years I've made a conscious decision to cut grass less often so as to leave more space for insects. By taking just one cut of grass for fodder and also by raising the slides on the topper (cut once) to leave a longer thatch and hence leaving more living space for insects, frogs and newts. This summer into autumn we have noticed a huge increase in caterpillar numbers especially the hairy horse caterpillar. I also observed an increase in wildflowers especially types of vetch and also knapweed growing in fields away from the hedges.

Gerry Fitzsimons, Beef farmer, Co. Cavan

JAMES HAM is a beef, tillage and forestry farmer & FFN Ambassador, creating both great produce and diverse habitats on his farm in Co. Westmeath.

James says: *"For years we have been fed a model of farming that sees only income from production at all cost. But farming alongside nature has reduce[d] our expenses. So how does it work for us?*

- *We gave up on striving for high stocking rates years ago. The result has been healthier cattle, and so less vets bills, thus reduced expense. Lower stocking rate means less need to push the soil beyond it's capacity, so less fertiliser, healthier soil and reduced expense.*
- *We are lucky to have the land suitable for growing some barley, leaving us self-sufficient in feed and straw. The cereal crop adds to the diversity of species on the farm. Reducing to almost no chemicals on the crop is a further reduced expense, but also has improved soil health and we see an increase in insects which then has nature benefits.*
- *The cereal rotation means that we are reseeding regularly, and for the last ten years have gone to more mixed seed mixtures with the emphasis on older less demanding grass types, and clover which results in less fertiliser cost, but also benefits nature.*
- *Including species such as Plantain and Yarrow, help combat the worm load in cattle. We haven't used chemical dose on the stock for a couple of years, with no adverse affects and reduces costs, both chemical and labour. Also hugely beneficial for soil biodiversity.*
- *I have continued the practice of hedge laying, which leaves the hedges much better for biodiversity, but means better hedges for livestock shelter, contributing to the thrive of the animals as they have better weights, so increased value at sale. On our cattle-only farm, a lot of our fields are easier to fence due to the quality of the hedges which reduces expense.*
- *We also have managed for years to produce enough of our firewood need from the hedge maintenance work, so eliminating household fuel bills which is a big one.*
- *The forestry/woodland, managed as Continuous Cover Forestry, is already also contributing to the supply of fuel, while developing a very nature friendly woodland system it has reduced the household cost. There is some potential for sale of firewood also. Furthermore, the mixtures of species in the woodland is hugely necessary for biodiversity. We planted some plots of Hazel to that end, but for the last two years I have found a small market for the coppice produce from the Hazel, for use in gardening which has bought a new income, albeit limited.*

After all that, I suppose what can be said is that making the farm work around nature, leads to reduced costs, and our experience is that, despite perceptions, the production side of things is still working well."

HORTICULTURE

FARMING FOR nature
AMBASSADORS

We look at the farm as a place which doesn't just produce something to be sold somewhere else but also as a place we can rely on to meet more of our needs - fuel, materials, food year round and a pleasant place to spend time. Giving space to those other needs means more space for nature, more varied habitats and greater autonomy to us on the ground.
Fergal Anderson, Horticulturalist, Co. Galway

HORTICULTURE

FARMING FOR nature AMBASSADORS

Soil health is key. I am all the time building organic matter and hopefully carbon storage in the soil. Using minimum tillage, slow tilling, and avoiding prolonged bare soil periods is imperative ... cover crops and green manure crops are a must ... they build soil health and diversity, whilst also increasing insect and bird life on your holding.

Make quality compost, it recycles organic materials and it makes your holding "hum" with life.
Jim Cronin, Horticulturalist, Co. Clare

The no dig beds have allowed me to plant vegetables and walk away and have very little time weeding. No cultivation whatsoever and very healthy crops.
Fergal Smith, Mixed stock farmer, Co. Clare

Soil

Healthy soils store carbon.

- Compost your vegetative waste! – check out online videos to learn how to make the most nutrient dense compost fertiliser
- Increase organic material by adding compost, farmyard manure and crop residues to your soil
- Choose min-till and direct drilling over inversion ploughing
- Diversity is key to soil health; experiment with catch, combi, cover, and double-cover crops in your rotations
- Maintain aerated soils by avoiding compaction from increasingly heavy farm machinery
- Consider cultivating in spring rather than autumn
- Get to know your soil and see what it looks like under the surface – don't just soil test, dig some holes and have a look!
- Keep soil covered – exposed soils are degraded soils
- Try biostimulants and nature-friendly inoculants e.g. vermi-liquid or compost fertiliser instead of chemical seed and soil treatments
- A single cubic inch of soil can contain eight miles of mycelia – naturally occurring fungal hyphae that boost soil fertility. Allow these engines of growth to work for you by avoiding fungicides where possible
- Be curious! Discover more about your own soil by exploring apps and online resources
- Experiment with soil building techniques from regenerative farming, permaculture, organic farming, or Korean Natural Farming

Co-benefits for farmers

Healthy soil:

- Increases yields
- Has a higher level of available nutrients for 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)

Trees, scrub & hedgerows

Woody vegetation captures carbon.

- Allow natural regeneration of trees and scrub in less productive areas or difficult corners
- Plant diverse native hedgerows
- Allow existing hedgerows to grow tall and wide
- Diversify farm enterprises by planting a native woodland
- Try agroforestry/silvopasture
- Retain existing hedgerows, woodland, copses and scrub

Co-benefits for farmers

- Shelter-belts for crops
- Diverse cropping
- Habitat for pollinators and beneficial predatory insects
- Better-connected and richer wildlife habitats
- Improved drainage and soil and water quality
- Reduced soil erosion

HORTICULTURE

Nutrient management

The manufacture of chemical fertilisers generates ~1.4% of all carbon dioxide emissions.

Furthermore, the application of fertilisers releases nitrous oxide, a gas with 300 times the global warming potential of carbon dioxide. Reduce use by increasing efficiency:

- Permaculture, organic farming and Korean Natural Farming all offer solutions in terms of maximizing production in horticulture whilst minimizing chemical inputs
- Maximise nutrient uptake by crops by maintaining optimum soil pH
- Choose crops that require fewer chemical treatments and are naturally resilient to climate change (e.g. more extreme droughts, floods or winds)
- Build fertility using catch crops, cover crops and green manures
- Spread fertiliser on warmer days (soil temp at least 6°C) to maximise absorption
- Include nitrogen fixing legumes in your crop rotations (e.g. peas, vetch, beans)
- Try simple mobile phone operated GPSs and tractor sensors to maximise nutrient uptake through targeted spreading
- Explore alternatives to chemical fertilisers (e.g. compost, organic manures)

Co-benefits for farmers

- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)
- Improved long-term soil fertility (increased yields and climate resilience)
- Greater resilience to shifts in market forces (less reliance on expensive external inputs) and to extreme weather events (e.g. droughts and floods)

FARMING FOR nature
AMBASSADORS

MycoFarming is not just about rediscovering the wonders of mushrooms for our farms and environment. It is about improving our understanding of their role in the natural world ... If we want to build more resilient, sustainable and climate-proofed farms we need to drastically reduce our chemical and oil based inputs. Replacing them with nutrients and minerals released from our existing bedrocks and soils by the expertise of a hundred million years of evolution.

Thomas & Claire O'Connor, Horticulturalists, Co. Kerry

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:

- Minimise water use – harvest rainwater and choose drought resistant plant varieties
- Regularly update and repair irrigation systems
- Treat your chemicals with respect – just one drop of pesticide can pollute a small stream for over 30kms!
- Boost populations of predatory insects (and reduce the need for pesticides) by creating or enhancing hedgerows and field margins – these will move onto the crop in spring, naturally reducing the pest burden
- 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!
- Reduce run-off from fields by slowing the flow of surface water: plant buffer strips, field margins and native hedgerows; never spread or spray when rain is due
- List the potential sources of run-off from your farm and how you might eliminate them. Some of these (e.g. herbicides, pesticides, fungicides) are more obvious than others (e.g. spoil from tractor tyres, washings or sediment from soil erosion)
- Reduce herbicide use by using alternative methods of weed control e.g. non-synthetic herbicides, mulching and diverse crop rotations
- Eliminate costly waste - use fertilisers, herbicides, pesticides, fungicides, molluscicides and chemical seed treatments only where needed
- Every drop counts! – treat any spray residue from washings, tanks and storage containers with respect

Co-benefits for farmers

- Reduced input, labour, fuel and machinery costs
- Cleaner water - research has detected herbicides in 38% of drinking water wells tested in Ireland!
- A healthier working environment for the farmer, the farm family, the local community sand for future generations!

HORTICULTURE

Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which horticultural systems can minimise their carbon footprint.

- Consider using solar water pumps - the technology and cost has greatly improved in recent years
- Heat pumps can be a good alternative to fossil fuel based heating systems
- Turn it off when not in use! Lights, fridges, freezers, fans, heaters, computers etc. all contribute to the farm carbon footprint
- Drinking water production and supply requires energy, yet >43% of treated drinking water in Ireland is lost to leaks. Fix leaks!
- Consider renewable energy – is there a roof that could support solar panels?
- Minimise chemical fertilisers, herbicides and pesticides – these are all manufactured using fossil fuels
- Take care when opting for 'degradable plastics' - many products will leave plastic residues in your soil
- Cut down route-to-market costs by selling direct to consumer and transport emissions by selling locally
- Minimise food waste and make sure to compost any vegetative waste – it's a valuable resource!
- Harvest water from buildings – using this 'grey water' to grow crops can save money and energy
- Use machinery (diesel!) efficiently – check tyre pressure regularly and remove unnecessary tractor weights
- Plastics are produced using fossil fuels – avoid suppliers that use excessive packaging

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience
- Increased opportunities for marketing sustainable produce

FARMING FOR nature AMBASSADORS

I focus on selling my vegetables within a ten mile radius of the farm, which reduces fossil fuel use.
Jim Cronin,Horticulturalist, Co. Clare

Taking control of your inputs and creating a more circular farming system is the ultimate aim of organic farming. For both ecologically sustainable reasons and to keep costs down. Biodiversity improves pollination opportunities on farm increasing yields of certain crops. Then also feeds our bees.
Joe & Aoife Reilly, Horticulturalists, Co. Mayo

Curious?

Have you run the numbers?

Going organic

Have you run the numbers for going partly or fully organic? New supports and a growing market are making this an increasingly attractive option for certain sectors in horticulture.

Not ready to go fully organic?

Try some small-scale experiments using organic methods to reduce chemical inputs, or with techniques from permaculture, agroforestry, regenerative farming or Korean Natural Farming.

Nature co-benefits

Climate action on horticultural holdings can benefit nature by creating:

- More species-rich and diverse landscapes, 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 farmers; when we experience nature on another farm we are more likely to want to protect it on our own!

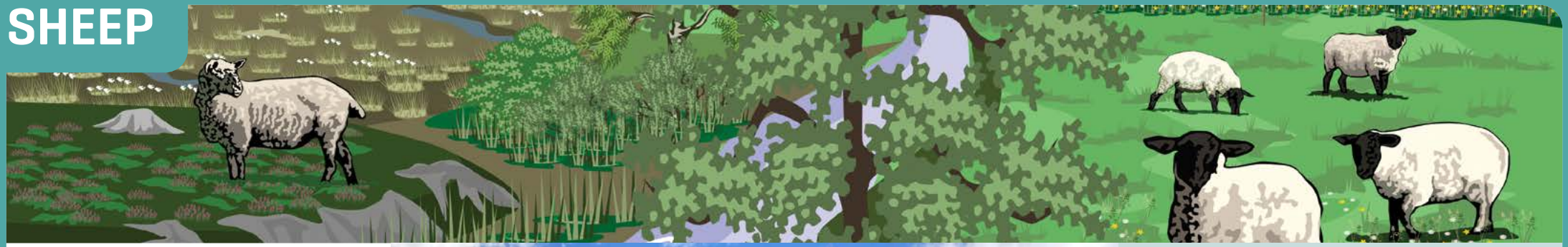
Nothing beats nature for providing natural climate change adaptation and mitigation. Boosting biodiversity, from the soil to the treetops, will help your farming system to remain productive and resilient in the face of increasingly unpredictable weather events. In horticulture in particular, rough grassland, fallow plots, beetle banks, hedgerows etc. provide habitat for pollinators and predatory insects. Pollinating insects can substantially boost yields whilst predatory insects can provide natural controls for crop pests, allowing you to reduce pesticide use.

SHEEP

FARMING FOR nature
AMBASSADORS

By far the most dramatic change I have seen on the farm is when I went to daily moves of the flerd [...cows, sheep & goats...] onto fresh pasture in our holistic planned grazing system. By mimicking how nature has managed grasslands for millions of years I have seen the grasses starting to express themselves in their true form. For me growing healthy grasses is the fastest way to build soil organic matter and in turn store carbon from the atmosphere safely in the soil again. It makes me smile to think that plants and soil microbes can turn one of our biggest problems into a solution and a side effect is lush grass that can feed our livestock.
Cathal Mooney, Mixed stock farmer, Co. Donegal

SHEEP



Bogs & uplands

Peaty soils store an incredible amount of carbon, but they are fragile - it can take ten years for a single centimetre of peat to form!

- Retain (don't drain!) bogs and wetlands
- Avoid burning, harvesting turf, forestry, or overgrazing on bogs or peatlands
- Rewet and enhance bogs and wetlands by blocking manmade drains
- Fence livestock off sections of uplands to allow natural regeneration – historically our uplands would have supported a mosaic of trees, shrubs and grasslands

Co-benefits for farmers

- Flood and drought mitigation - bogs act as giant sponges, absorbing water and then slowly releasing it
- Clean water - bogs and wetlands purify water
- Reduced soil erosion

Pastures & soil

Healthy soils store carbon

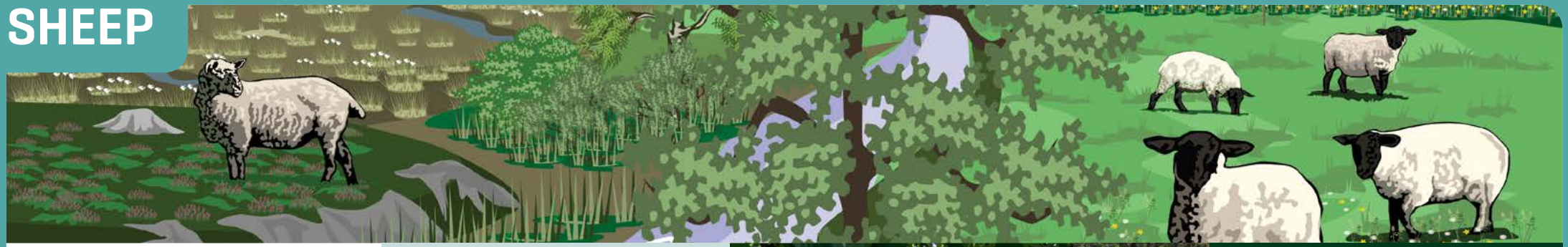
High grazing pressure can lead to long-term damage of soils. Sheep will also select for certain plants, reducing sward diversity over time. Make your pastures more climate and biodiversity friendly:

- Encourage species-rich swards to naturally fix nitrogen
- Move feeding rings regularly to prevent poaching and areas of heavy enrichment
- Keep soil aerated by avoiding compaction by heavy machinery or poaching
- Maintain low stocking rates (extensive grazing)
- Avoid reseeding permanent pastures
- Allow sward diversity to develop naturally by reducing grassland management intensity (limit fertilising/spraying)
- Retain maximum soil carbon by minimising ploughing and reseeds
- Maximise the grazing season to minimise the need for imported fee

Co-benefits for farmers

- Reduced fertiliser and feed (cut costs)
- Improved drainage and drought tolerance
- Increased soil fertility and long-term yields

SHEEP



Nutrient management

The manufacture of chemical fertilisers generates ~1.4% of all carbon dioxide emissions.

Furthermore, the application of both slurry and fertilisers releases nitrous oxide, a gas with 300 times the global warming potential of carbon dioxide. To reduce fertiliser use but still maximise grass growth:

- Lock nutrients into the soil by maintaining optimum pH
- Create a nutrient management plan
- Retain, enhance or create buffer strips and hedgerows to slow run-off after application
- Use low emission slurry spreaders
- Switch CAN for protected urea
- Spread fertiliser and farmyard manure on warmer days (soil temp at least 6°C)
- Include nitrogen fixing legumes in swards or feed crops
- Use GPSs and tractor sensors for targeted spreading)

Co-benefits for farmers

- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)

Trees, scrub & hedgerows

Woody vegetation captures carbon.

- In less productive areas, fence out sheep to allow for natural regeneration of native trees and scrub
- Plant native hedgerows
- Allow existing hedgerows to grow tall and wide
- Consider agroforestry/silvopasture
- Diversify farm enterprises by planting a native woodland
- Retain, enhance or create copses and scrubland in less productive areas

Co-benefits for farmers

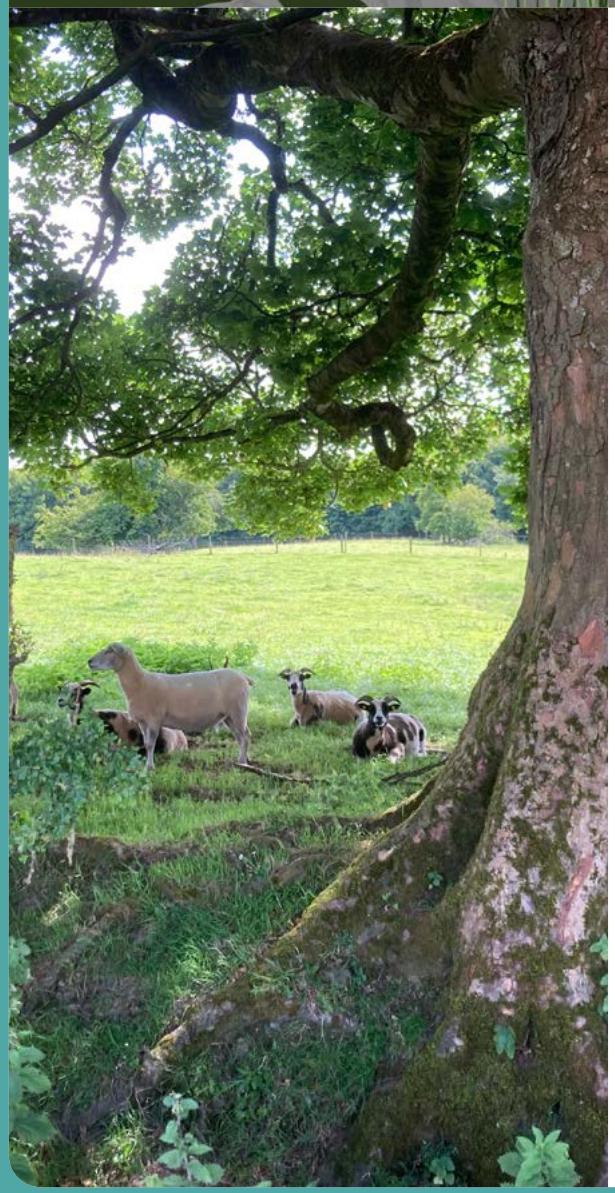
In a sheep farming system woody vegetation can:

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

FARMING FOR nature AMBASSADORS

Encourage clover at all costs, I have established perennial clover over the years. I think if you have to continually sow it, it defeats the purpose to some degree i.e., diesel use. Use your topper once a year ONLY, when plants have flowered. Use a contractor for silage, slurry etc. It's much more efficient and they can afford the latest eco-friendly machinery. Manage your hedgerows and fields to maximise the benefits for pollinators, birds, etc. Dig a pond. Think up of new ideas to acquire fertiliser. An example would be to get your neighbours to deliver their grass and hedge clippings to your farm or a depot. You can then mix this with your farmyard manure. A lot of grass cuttings end up polluting streams and (are) often dumped. I'm a great fan of bush fruits and nut trees. They can be established easily, and need little maintenance with huge reward. E.g., Apple, Plum, Gooseberry, Blackcurrant, Hazel, Cob, Walnut, Raspberry, Loganberry, Blackberry. Saves buying fruit and nuts with a large carbon footprint and plastic packaging.
Noel Kiernan, Sheep & Beef farmer, Co. Longford

SHEEP



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:

- Retain, enhance or create wetlands buffer strips, field margins and native hedgerows to reduce run-off
- Never spread or spray inputs when rain is due
- 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
- 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)
- Manage grazing livestock: fence livestock well back from watercourses; don't allow stock to drink directly from rivers or lakes; avoid poaching and pinch points

Co-benefits for farmers

- Reduced input, labour, fuel and machinery costs
- Clean water and good health - research has detected herbicides in 38% of drinking water wells tested in Ireland
- Habitats – clean water benefits humans and nature alike

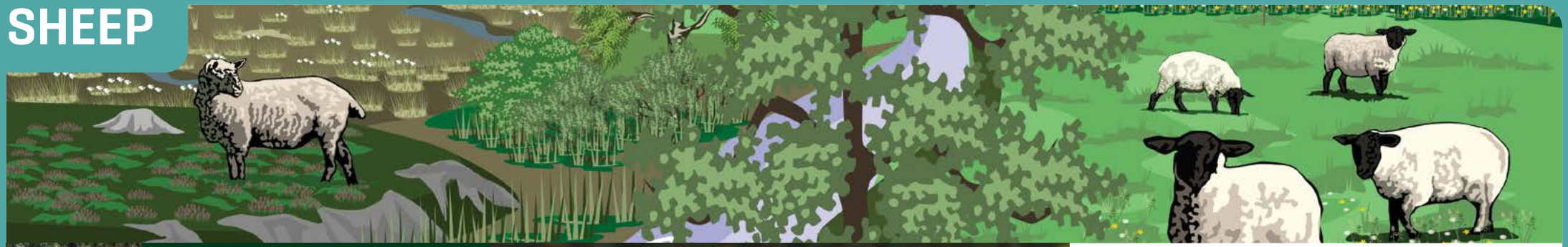
Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which sheep farms can minimise their carbon footprint.

- Consider renewable energy - a shed roof can be the ideal place to install solar panels and supports are increasingly available
- Consider solar fencers and water pumps
- Mend leaky pipes and troughs - drinking water production and supply requires energy yet >43% of treated drinking water in Ireland is lost to leaks
- Minimise chemical fertilisers, herbicides and pesticides – these are all manufactured using fossil fuels
- Reduce transport costs by producing more of your own inputs on-farm e.g. compost fertiliser, feed, bedding etc.
- Plastics are produced using fossil fuels – avoid suppliers that use excessive packaging
- Turn it off when not in use! Appliances, lights, machinery etc. all contribute to the farm carbon footprint

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience



FARMING FOR nature AMBASSADORS

I spoke to a conventional farmer recently. We talked about the profit from our farms, leaving out single payment, organic etc. This man buys stores and fattens them for the factory using concentrate. He also would use fertiliser, sprays, reseeds etc. After doing his sums this year he said he was only making €5 per hour for himself despite beef being a good trade in the factory. I would beat that €5 figure because I don't have the significant and increasingly expensive overheads that he has.
Noel Kiernan, Sheep & Beef farmer, Co. Longford

A good stocking rate, where your results are monitored and recorded, can then be tailored to suit your needs.
Colm Gavin, Sheep farmer, Co. Mayo

From what I'm doing on our commonage it has started to show results towards improving the scores for any future payments that may be there and we're seeing better results from the sheep performance and that means a better financial return.
Pat Dunne, Sheep farmer, Co. Wicklow

Curious?

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

Reduced stocking rates

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 stocking rates?

Going organic

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

Nature co-benefits

Climate action on sheep farms can benefit nature by creating:

- More species-rich and diverse landscapes, 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 sheep 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.

EQUINE

FARMING FOR nature
AMBASSADORS

Through working with FFN I am amazed by all the larger more commercial farmers having those light bulb moments when they questioned all they were putting into their farm (not just fertiliser and chemicals but also labour) and weighing up what they get out of it in return - and then making the change and not looking back - less costs, better life, more time for family.
Nia O'Malley, Equine and beef farmer, Co. Galway

Pastures & soil

Healthy soils store carbon.

Healthy, biodiverse pasture has a high carbon storage capacity. High grazing pressure from horses can lead to long-term damage of soils. Horses will also select for certain plants, meaning that high stocking rates or intensive grazing will reduce the diversity of the sward over time.

- Consider how many horses are on the farm – is there enough pasture to allow for daily turnout but prevent overgrazing, or would lowering the number result in a healthier farming system long-term?
- Avoid 'sacrifice paddocks' – once damaged by poaching, your soil will take many years to recover
- Maintain species-rich swards to naturally fix nitrogen and improve drainage and drought tolerance
- Move feeding areas and water troughs regularly to prevent poaching and enrichment
- Maintain permanent pastures - cultivation to reseed will reduce diversity and release carbon from the soil
- Avoid compacting your pasture with increasingly heavy farm machinery
- Avoid creating bare patches of soil – bare soil releases carbon into the atmosphere
- Maximise turn-out to minimise the need for hard feed – the production of soya based hard feed is contributing to rapid destruction of the Amazon rainforest
- When buying horses, consider our world famous native breeds (i.e. Connemara ponies and the Irish draught). These breeds are fantastic all-rounders, happily live out year rounds, are good doers and require less land (and feed) to maintain good condition

Fertilisers

The manufacture of chemical fertilisers generates ~1.4% of all carbon dioxide emissions.

Furthermore, the application of fertilisers releases nitrous oxide, a gas with 300 times the global warming potential of carbon dioxide. To reduce fertiliser use but still maximise grass growth:

- Create a nutrient management plan
- Sow horse-friendly multi-species swards to naturally fix nitrogen
- Soil test paddocks regularly - maximise nutrient uptake by crops by maintaining optimum soil pH
- Switch CAN for protected urea
- Correctly compost horse manure before spreading – there are lots of online videos about making the very best compost heaps!
- Spread fertiliser and farmyard manure on warmer days (soil temp at least 6°C)
- Include nitrogen fixing legumes in swards or feed crops
- Use GPSs and tractor sensors for targeted spreading

Co-benefits for farmers

- Healthy stock – diverse swards contain a wide range of vitamins, minerals and natural anthelmintics (dewormers)
- Healthy soil – will produce higher grass yields and have a lower weed burden
- Improved farm self-sufficiency and climate resilience

Trees, scrub & hedgerows

Woody vegetation captures carbon.

- In less productive areas, fence out horses to allow for natural regeneration of trees and scrub
- Plant horse friendly native hedgerows
- Allow existing hedgerows to grow tall and wide
- Plant some native trees in larger pastures to provide shade and shelter for the future
- Diversify farm enterprises by planting a native woodland
- Retain, enhance or create copses and scrubland

Co-benefits for farmers

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:

- Manage your muckheap! Run-off from muckheaps can cause havoc in watercourses. Keep your muck heap on a dry surface, cover stored muck with a reusable tarpaulin and control any run-off
- Research how to compost horse manure on your farm – when composted correctly (well aerated), it can be used as a brilliant natural fertiliser and without the risk of increasing your paddock's parasite load
- Make a simple list of the potential sources of run-off from your yard and how you might eliminate them. Some of these (e.g. muck, herbicides) are more obvious than others (e.g. veterinary products (e.g. wormers) in horse manures, wash-bay run off, spoil from tractor tyres, micro-plastics from arena surfaces)
- Before spraying herbicides, try alternative methods of weed control e.g. topping, improving soil fertility or rotational grazing. As many 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. Recent research has detected herbicides in 38% of drinking water wells tested in Ireland
- Reduce nutrient run-off from pasture: plant buffer strips, field margins and hedgerows to slow the flow of nutrients; never spread natural or synthetic fertilisers when rain is due

Co-benefits for farmers

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

Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which equine enterprises can minimise their carbon footprint

- Consider renewable energy – is there a roof that could support solar panels? Can you use a solar powered electric fencer?
- Turn it off when not in use! Arena and yard lights, heaters, office computers etc. all contribute to the farm carbon footprint
- Fix leaky pipes and troughs! Drinking water production and supply requires energy yet >43% of treated drinking water in Ireland is lost to leaks.
- Minimise or eliminate the use of chemical fertilisers and herbicides – these are manufactured using fossil fuels
- Plastics are also produced using fossil fuels – avoid suppliers that use excessive packaging
- Maximise turnout at grass to minimise emissions from the production and transport of hay/haylage, bedding and hard feed. Could you grow some of your own feed and bedding (e.g. hay, oats, straw) on farm

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience

Curious?

Have you run the numbers for lowering your stocking rate?

When all annual input costs are considered (e.g. feed, fertiliser, fencing, fuel, and, importantly, LABOUR!), could it make financial as well as climate sense to reduce numbers slightly, thereby taking the pressure off your pastures?

Nature co-benefits

Climate action on equine holdings can benefit nature by creating:

- More species-rich and diverse landscapes, 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 landscapes - loud with humming insects and singing birds
- A model for other equestrian enterprises; when we experience nature on another holding 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.

FARMING FOR nature AMBASSADORS

It was when I had the chance to channel my creativity into a tangible action; give a small piece of land back to natural processes, change a grazing technique, plant trees or use native seeds, that I felt part of the process of creation. I felt alive. I think we must balance the very grim and challenging information with the incredible and inextinguishable human drive to create beauty. Our challenge as farmers is to align our concept of beauty with that of the essential beauty of nature's systems, our life support systems.

Kate Egan, Horse owner, horticulturalist and FFN Ambassador, Co. Westmeath

PIG

Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which pig farms can minimise their carbon footprint.

- Consider renewable energy - a shed roof can be the ideal place to install solar panels and supports are increasingly available
- Improve building insulation and ventilation – being able to effectively control internal temperature can lead to less energy wastage
- Mend leaky pipes and troughs - drinking water production and supply requires energy yet >43% of treated drinking water in Ireland is lost to leaks
- Choose suppliers that minimise plastic packaging - plastics are produced using fossil fuels
- Consider less intensive management systems – pasture-based systems can reduce energy costs
- Turn off the lights! – utilise natural light where possible and LED bulbs when artificial light is necessary
- In intensive farrowing systems, use heated creepboxes or heat pads to reduce the need to heat the entire farrowing house
- Reduce emissions from the transport of feed by growing feed crops on farm

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience
- Increased resilience to market forces (feed & fertiliser costs)
- Increased animal welfare and market price

Trees, scrub & hedgerows

Woody vegetation captures and stores carbon.

- Where possible, plant native trees around the production areas, driveways, sheds and farmyard
- In pasture-based systems, allow for natural regeneration of trees and scrub in less productive areas
- Plant native hedgerows
- Allow existing hedgerows to grow tall and wide
- Experiment with agroforestry/ silvopasture to build a climate resilient farm system
- Diversify farm enterprises by planting a native woodland
- Retain, enhance or create woodland areas, copses and scrubland

Co-benefits for farmers

In a pig farming system woody vegetation can:

- Provide enrichment
- Provide shade & shelter
- Improve animal welfare
- Enhance biodiversity
- Diversify farm enterprises
- Create a positive working environment

Soil

Healthy soils capture carbon.

- Healthy, undisturbed soils store carbon - retain soil carbon by minimising ploughing and reseeds
- Carefully design wallows and shaded areas to avoid excessive poaching and pinch points
- Maximise the outdoor season to minimise the need for imported feed – our use of imported feeds is contributing to rapid destruction of the rainforest in Brazil
- Plant species-rich swards to naturally fix nitrogen, improve drainage and build flood and drought tolerance
- Reduce grassland management intensity to allow sward diversity to develop naturally
- Avoid compacting your pasture through overstocking or with increasingly heavy farm machinery
- If growing your own feedstuffs, consider no- or min-till and the use of multi- and cover-crops
- Choose breeds wisely – traditional (habitat adapted) breeds (often now associated with artisan meat production) can require less inputs in pasture based systems
- Rent out a pig! – while too much rootling can be destructive to soils, pig rootling can be a valuable conservation tool where natural soil disturbance is desirable (e.g. to break up areas of dense bracken to plant trees); some farmers are renting out their pigs for this purpose!

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)

FARMING FOR nature AMBASSADORS

A healthy soil in any farming system is like a nice three legged stool, good soil physical structure, buzzing soil biology and chemical activity that draws minerals to make your plants thrive (...) by building your soil health and the nature value on the farm through good hedgerow management also, (farmers) are securing themselves from the future hits of Climate Change, Biodiversity Loss and Water Quality issues.
Sean O'Farrell, Mixed-stock (pigs, poultry, cattle, goats) farmer, Co. Tipperary

Nutrient management

A nutrient management plan can help you to both improve efficiency and reduce emissions from pig slurry and other nutrients.

- Treat your pig slurry with respect! Pig slurry is an increasingly valuable farm asset, store it carefully and make sure it doesn't get wasted!
- A slight reduction in stocking rate could take the pressure off in terms of pig slurry storage
- In outdoor systems, retain, enhance and create buffer strips and hedgerows to help prevent nutrient run-off
- Maximise nutrient uptake by crops by maintaining optimum soil pH
- 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)
- Include nitrogen fixing legumes in swards or feed crops (e.g. clover, vetch, beans)
- If fertilising feed crops, switch CAN for protected urea
- Mobile phone operated GPSs and tractor sensors can help to maximise nutrient uptake through more targeted spreading

Co-benefits for farmers

- Maximising use of a valuable asset
- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)
- Decreased vulnerability to market forces

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:

- List the potential sources of run-off from your farm and how you might eliminate them. Some of these (e.g. pig manure) are more obvious than others (e.g. spoil from tractor tyres, washings or waste feed)
- Keep clean run-off e.g. (from shed roofs and clean paved areas) separate from soiled water, washings and slurry
- Spread soiled water in dry fields far from water-courses
- In outdoor systems, fence pigs well back from watercourses; don't allow stock to drink directly from rivers; avoid poaching and pinch points
- Reduce nutrient run-off from pasture: plant buffer strips, field margins and hedgerows to slow the flow of nutrients; create a wetland to soak up and filter excess run-off after heavy rain
- Never spread or spray inputs when rain is due
- 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, topping, 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.

Co-benefits for farmers

- Reduced input, labour, fuel and machinery costs
- Clean water and good health - research has detected herbicides in 38% of drinking water wells tested in Ireland
- Habitats – clean water benefits humans and nature alike

Curious?

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

Reduced stocking rates

With the current shift in farm payments away from production and towards environmental measures, could reducing the intensity of your farming system now make sense from both climate and financial perspectives?

Going organic

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

Nature co-benefits

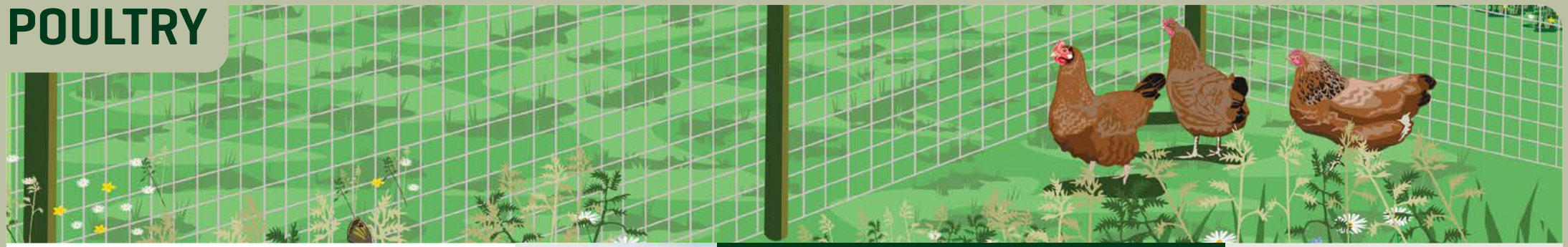
Climate action on pig farms can benefit nature by creating:

- More species-rich and diverse landscapes, 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 pig 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.

POULTRY

POULTRY



Energy & fuel

Maximising energy efficiency and moving away from fossil fuels are two ways in which poultry farms can minimise their carbon footprint.

- Consider renewable energy - a shed roof can be the ideal place to install solar panels and supports are increasingly available
- Mend leaky pipes and troughs - drinking water production and supply requires energy yet >43% of treated drinking water in Ireland is lost to leaks
- Choose suppliers that minimise plastic packaging - plastics are produced using fossil fuels
- Explore new opportunities for ground source heat pumps
- Improve building insulation and ventilation – being able to effectively control internal temperature can lead to less energy wastage
- Consider less intensive management systems – pasture-based systems can reduce energy costs
- Regularly check that thermostats are clean, free-from droughts and operating correctly
- Turn off the lights! – utilise natural light where possible and LED bulbs when artificial light is necessary
- Reduce transport emissions from feed by growing feed crops on the farm where possible, or by buying from a local tillage farmer or horticulturalist

Co-benefits for farmers

- Reduced fuel and input costs
- Reduced energy costs
- Improved farm self-sufficiency and climate resilience
- Increased resilience to market forces (feed & fertiliser costs)
- Increased animal welfare and market price

FARMING FOR nature AMBASSADORS

The trees which we planted are now 4 years and older. They are started to really give shape to the farm and wind protection. Also seeing a noticeable increase in bird life around the farm. We have planted the trees in the hedges to thicken them up and then we have broke a lot of the fields into 20 metre lanes. These are giving us a lovely structure to the farm and in time no doubt will help with adding structure underground.
Fergal Smith, Mixed stock farmer, Co. Clare

Trees, scrub & hedgerows

Woody vegetation captures and stores carbon.

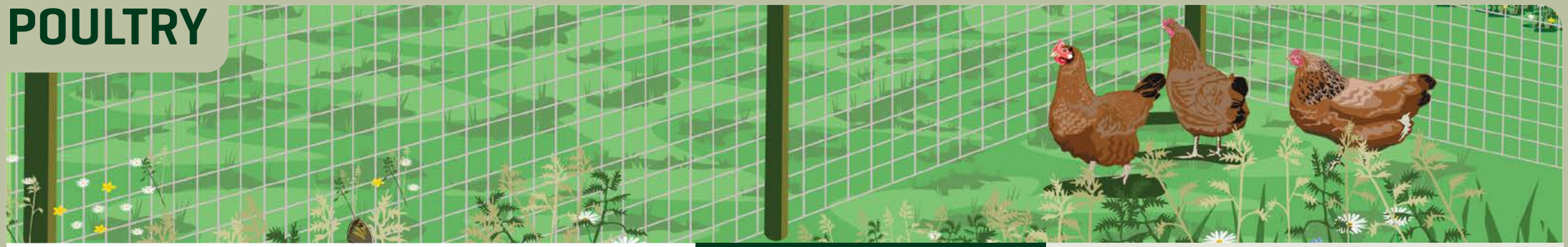
- Where possible, plant native trees around the production areas, driveways, sheds and farmyard
- In pasture-based systems, allow for natural regeneration of trees and scrub in less productive areas of the pasture
- Plant native hedgerows
- Allow existing hedgerows to grow tall and wide
- Experiment with agroforestry/ silvopasture to build a climate resilient farm system
- Diversify farm enterprises by planting a native woodland
- Retain, enhance or create woodland areas, copses and scrubland

Co-benefits for farmers

In a poultry farming system woody vegetation can:

- provide enrichment
- provide shade & shelter
- improve animal welfare
- enhance biodiversity
- diversify farm enterprises
- create a positive working environment

POULTRY



Soil

Healthy soils capture carbon.

- Healthy, undisturbed soils store carbon - retain soil carbon by minimising ploughing and reseeds
- Carefully design wallows and shaded areas to avoid excessive poaching and pinch points
- Maximise the outdoor season to minimise the need for imported feed – our use of imported feeds is contributing to rapid destruction of the rainforest in Brazil
- Plant species-rich swards to naturally fix nitrogen, improve drainage and build flood and drought tolerance
- Reduce grassland management intensity to allow sward diversity to develop naturally
- Avoid compacting your pasture through overstocking or with increasingly heavy farm machinery
- If growing your own feedstuffs, consider no- or min-till and the use of multi- and cover-crops
- Choose breeds wisely – traditional (habitat adapted) breeds (often now associated with artisan meat production) can require less inputs in pasture based systems
- Rent out a pig! – while too much rootling can be destructive to soils, pig rootling can be a valuable conservation tool where natural soil disturbance is desirable (e.g. to break up areas of dense bracken to plant trees); some farmers are renting out their pigs for this purpose!

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)

FARMING FOR nature AMBASSADORS

Farming with nature makes sense on every level, enhances the fertility of the soil, helps to trap carbon and produces more nutrient dense food. Here at Ballymaloe Cookery School, we compost all our organic matter and bring it slowly to the humus stage to further enrich the soil. Consequently, in our experience, we have less problems with insects and plant disease. Plus there's the joy and satisfaction of farming sustainably in harmony with nature, no artificial inputs or pesticides hence the farm is more viable.
Darina Allen, Mixed Stock Farmer

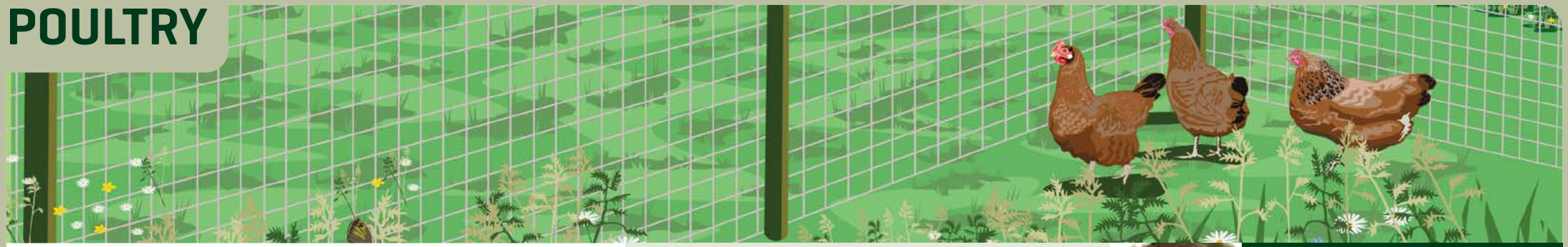
Nutrient management

A nutrient management plan can both help you to reduce your carbon emissions (from manure and litter) and increase efficiency in the use of any fertilisers (e.g. if you are growing your own feedstuffs).

- Improve welfare – healthy birds have better feed conversion rates, meaning reduced feed input
- Treat your manure with respect! – organic manure is an increasingly valuable farm asset, don't allow it to be wasted!
- Using poultry manure on-farm to help grow your own feed can greatly reduce transport and production emissions.
- Covering manure heaps will reduce both emissions and run-off
- In pasture-based systems, retain, enhance and create buffer strips and hedgerows to help prevent nutrient run-off
- Where possible, use low emissions slurry spreading and maximise nutrient uptake by crops by maintaining optimum soil pH
- To maximise nutrient absorption, spread fertiliser, slurry and farmyard manure on warmer days (soil temp at least 6°C)
- Include nitrogen fixing legumes in swards or feed crops (e.g. clover, vetch, beans)
- If fertilising feed crops, use protected urea rather than CAN
- Mobile phone operated GPSs and tractor sensors can help to maximise nutrient uptake through more targeted spreading

Co-benefits for farmers

- Maximising use of a valuable asset
- Decreased fertiliser use (lower costs)
- Increased farm self-sufficiency (lower external inputs)
- Decreased vulnerability to market forces (fertiliser costs)



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:

- List the potential sources of run-off from your farm and how you might eliminate them. Some of these (e.g. chicken manure) are more obvious than others (e.g. spoil from tractor tyres, washings or waste feed)
- Keep clean run-off e.g. (from shed roofs and clean paved areas) separate from soiled water
- Spread soiled water in dry fields far from water-courses
- Reduce nutrient run-off from pasture-based systems: plant buffer strips, field margins and hedgerows to slow the flow of nutrients; create a wetland to soak up and filter excess run-off after heavy rain
- Never spread or spray inputs when rain is due
- 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, topping, 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
- In mixed-grazing rotations, 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
- Clean water and good health - research has detected herbicides in 38% of drinking water wells tested in Ireland.
- Habitats – clean water benefits humans and nature alike

Curious?

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

Reduced stocking rates

With the current shift in farm payments away from production and towards environmental measures, could reducing the intensity of your farming system now make sense from both climate and financial perspectives?

Going organic

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

Nature co-benefits

Climate action on poultry farms can benefit nature by creating:

- More species-rich and diverse landscapes, 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 poultry 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.

FARMING FOR nature AMBASSADORS

Nature has been the foundation of productive systems for millennia. Enhancing nature on your farm is actually building your resource into the future. Biological diversity or a strong natural system builds resilience to extremes of weather or climate change.
Sean O'Farrell, Mixed-stock (poultry, pigs, cattle, goats) farmer, Co. Tipperary

FARMING FOR nature AMBASSADORS

In Ireland we're lucky because the land can potentially provide us with so much - I'd hope for a future where we can make better use of that richness and diversity to provide more of what we need from the land around us, rather than a few crops or products that we then export overseas.
Fergal Anderson, Horticulturalist, Co. Galway

I cannot say I have any magical formula on Farming and Climate Change. The news on the climate crisis generates anxiety, and while we must know what the issues are to address them, much of the rhetoric is driven by fear. The problem with this, is to truly tackle it we must work from a place of creativity as we find new ways of farming and living together. Creativity cannot flourish in an environment of fear. So learn the issues relevant to your area, then switch it off, and find the part of you that is alive and connected to your land, farm and community and get creative.
Kate Egan, Horticulturalist, Co. Westmeath

In terms of on-farm climate action, this booklet is the tip of the iceberg. For more on-farm climate-action tips, or to connect with like-minded farmers, dip into the collection of local, national and international farming resources on the following page.

The information in this booklet is based on both fast-evolving scientific evidence and the experiences of pioneering farmers in Ireland. As with all suggestions concerning farming and nature, circumstances will change from field to field and farm to farm so it's not possible – or wise - to be too prescriptive. We always recommend that you begin by looking after, and ideally enhancing, what you already have in terms of habitats and species, giving nature the chance to do the 'heavy lifting' so to speak. Where this isn't possible and you want to create new habitats or change your farming system, it's best to proceed with some degree of caution (and consultation), observe the impact, and respond accordingly. And be patient, change does take time!

The following is a collection of additional resources that may help you on your farming for nature journey! Best of luck!

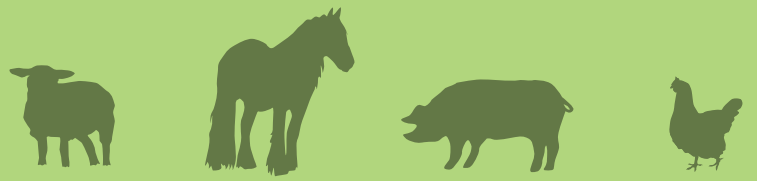
This document was compiled by Farming For Nature with input from our farming network. It was supported by joint funding from the National Parks and Wildlife Service (NPWS) and the Dept. of Agriculture, Food and the Marine (DAFM).

Farming For Nature comes under the charitable organisation Burrenbeo Trust.

Content by Dr Emma Hart. Artwork by William Helps. Graphics by Ide Deloughry.

- Explore our best practice guides, ground-tips, podcasts, farmer's forum, videos, farm walks, events, newsletters and more at **www.farmingfornature.ie**
- Understand how nature and carbon capture will likely be valued in the future at **www.naturalcapitalireland.com**
- Join the All Ireland Pollinator Plan to help boost the number of pollinating insects on your farm at **www.pollinators.ie**
- Learn how to build soil fertility and incorporate regenerative agriculture into your farming practices by joining BASE Irelands farmer-to-farmer support group at **www.baseireland.ie**
- Discover more about how to preserve or restore water bodies and simple farm water saving tips at **www.water.ie**
- Learn about the potential for agroforestry and silvopasture systems through workshops, farm walks and resources provided by the Irish Agroforestry Forum at **www.agroforestry.ie**
- Check out the Bride Project to see how dairy farmers can work towards more sustainable and climate friendly farms at **www.brideproject.ie**
- Up skill on soil health and food sovereignty in Ireland through Talamh Beo at **www.talamhbeo.ie**
- Understand how to preserve farm carbon on peatlands at **www.farmcarbon.ie**
- Keep up to date with developments in regenerative agriculture and sustainable food production in Northern Ireland and the UK by checking out Nature Friendly Farming at **www.nffn.org.uk** and The Sustainable Food Trust at **www.sustainablefoodtrust.org**
- Measure biodiversity on your own land with help from online resources at The National Biodiversity Research Centre at **www.biodiversityireland.ie**
- Get involved with exciting initiatives in wildlife conservation on Irish farmland through the Irish Wildlife Trust at **www.iwt.ie**
- Learn about farmland birds and other native biodiversity through BirdWatch Ireland's website and podcasts at **www.birdwatchireland.ie**
- Experiment with exciting new sustainable farming techniques (organics, permaculture, Korean Natural Farming) through courses and resources at the National Organic Training Skillnet (NOTS) at **www.nots.ie**
- Investigate the feasibility of going organic through the Organic Trust - **www.organictrust.ie**, and Irish Organic Association at **www.irishorganicassociation.ie**
- Listen to how Teagasc and the DAFM are transitioning towards more climate friendly farming practices through the Signpost webinar/podcast series at **www.teagasc.ie/signpostpodcast/**

Looking for more information?
Go to **www.farmingfornature.ie** or email **info@farmingfornature.ie**



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