

Dairy in a Healthy and Sustainable Irish and European Food System

As the year draws to a close, it is an opportune time to reflect on another busy time for Ireland's dairy farmers who are working from dawn to dusk to produce nutritious, delicious, healthy dairy products that are prized nationally and internationally for their taste, quality and environmental sustainability.

Ireland's grass based low-intensity farming model ensures that our 17,500 dairy farms are ideally placed to continue to produce dairy products in the most environmentally sustainable manner possible. Across the country, dairy farmers are acutely aware of the need to ensure that all activities on-farm are approached with environmental sustainability at the forefront in order to ensure the future viability of the land for the next generation.

Ireland's dairy farmers are working hard to embed the very latest technologies into their milk production process and to apply the most up to date learnings across a spectrum of activities on-farm. They are attuned to the importance of adopting a scientific, measured approach to their work. We see this from dairy farmers across the country who share their progress in relation to the application of innovations whether it relates to grassland management, soil sampling or economic breeding index, as part of a suite of measures, which contribute to overall environmental sustainability.

Allied with this is the work of a host of stakeholders from across the dairy industry, who are playing a critical role in supporting dairy farmers with the knowledge, technologies and on-farm supports to help the sector to further enhance their overall sustainability and to ensure that best practices are mainstreamed in dairy farms across the country.

Dairy farmers have a proud and rich heritage as one of Ireland's oldest indigenous industries. While contemporary public commentary has a laser sharp focus on environmental sustainability, it is important to highlight that a sustainability mindset is very much embedded, passed down through generations of dairy farmers who fully appreciate that they have a vital role as custodians of the land.

This sustainability mindset is one which has helped dairy farmers through many

significant changes, and which continues to support farmers as they respond proactively to one of the biggest challenges facing society - climate change. Recent research by the European Milk Forum found that almost 7 in every 10 believe that dairy farmers are committed to producing dairy more sustainably while the vast majority are keen to see the dairy industry provided with greater supports to embed sustainability initiatives into their milk production processes.

Further to this, we see that dairy continues to play an important role at mealtimes with 6 out of every 10 believing meals would not be the same without dairy, while 9 in every 10 say dairy plays a big part in their diet. It is fair to summarize that dairy remains a delight for Irish consumers and indeed globally with strong demand for Irish produced dairy products. The findings are a positive endorsement of the role of Irish dairy farmers as food producers and, given recent geopolitical events, also demonstrates the value that consumers place on locally produced products, a short distance from farm to table.

Our latest newsletter showcases the importance of dairy farmers as food producers with our recent visit to the award-winning Connelly family in Tuam, Co. Galway. Austin and Yvonne Connelly along with their four daughters are an excellent example of a best-in-class dairy farm, producing milk in an environmentally sustainable manner, making a positive contribution to their local and regional economy and supplying top class dairy to the region. The family, who were recent award winners at the NDC and Kerrygold Quality Milk Awards, are deploying the very latest scientific approaches in their milk production process and are a superb example of a "sustainability first" mindset.

We also learn more of the supports in place through the Teagasc Signpost Programme and the latest developments in this space, through their innovative signpost farm programme which is supporting dairy farmers across Ireland to take climate action, fostering collaboration and knowledge sharing between Teagasc, dairy farmers and agri-food organisations. As previously highlighted, dairy farmers are focusing on enhancing various elements of their production process, and the importance of grassland management comes under

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the spotlight. The sterling work undertaken by Kerry Group to support dairy farmers transition to sustainable farming practices is also profiled, with over 3,000 farm families across the southwest set to benefit from the Evolve initiative.

As we look ahead to a new year, it is both heartening and satisfying to learn of the work that is taking place on Ireland's dairy farms, how attuned dairy farmers are to the challenges of climate change and equally their awareness of their dual responsibilities as food producers and custodians of the land.

While challenges remain on the horizon with ambitious climate action targets sharply in focus, Irish dairy remains committed to meeting those targets and to working collaboratively and consistently to ensure that environmental sustainability is at the centre of what they do and remains the hallmark of Irish dairy.



Zoe Kavanagh,

Chief Executive, National Dairy Council & Spokesperson, European Milk Forum



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Farm Focus

The Connelly Family – Austin, Yvonne and their four daughters Ava, Anna, Jane and Kate

Tuam, Co. Galway

“Top quality products and quality time with my family. I’m not sure what other job would give you that.”

Yvonne Connelly



Austin & Yvonne Connelly on their dairy farm in Tuam, Co. Galway. Credit: Traction Media

Fifth-generation farmers, the Connelly family – Austin, Yvonne and their four daughters Ava, Anna, Jane and Kate – may be relatively new to dairy farming but have picked up plenty of silverware in the last few years for their approach to sustainable milk production. In September, the Connelly family were awarded the coveted NDC & Kerrygold Quality Milk Awards perpetual cup for excelling in all areas of the judging criteria, including milk quality, animal welfare and sustainable farming practices.

Austin inherited the family sheep and suckler farm in 2003 and fifteen years later, the family made the transition to dairy with an initial 80 cows. Today, the Connells milk 97 Holstein Friesian cows on 120 acres and enjoy the family life balance dairying has allowed

them to have with their four daughters. The epitome of modern farming, the four girls are constantly seeking out ways to make the processes on the farm even more efficient and effective.



Cows grazing at the Connelly family farm in Tuam, Co. Galway. Credit: Dora Kazmierak – and NDC & Ornuu Quality Milk Awards



(l-r) The Connelly family - Jane, Yvonne, Austin, Kate, Ava and Anna. Credit: Dora Kazmierak – and NDC & Ornuu Quality Milk Awards.

“Women are hugely important in a family farm situation. We have five women here. It’s a team effort and Austin wouldn’t do it by himself.”

Yvonne Connelly

The Connelly family credit their success in dairy farming to putting into practice what they have learned from other dairy farmers and local discussion groups, the support and expertise of their Aurivo milk advisor, and agri-advisory state agency Teagasc. They also focus on utilising what they have on farm first, making the most of the grass with as little input as possible while working with the environment. Measures implemented on the farm include:

Use of Clover

Incorporating clover into the meadow mix over the last number of years has helped to reduce usage of chemical fertiliser on the farm. This has also led to greater availability of biologically generated nitrogen.

Low Emission Slurry Spreading (LESS)

Spreading slurry through a dribble bar maximises the nutrients going into the soil,

reducing gases released into the atmosphere and ensuring the most efficient use of the natural fertiliser.

Improving EBI

By regularly analysing herd data, the Connellys can improve the Economic Breeding Index of their Holstein-Friesian herd. Criteria including milk production capacity, milk protein and fat as well as fertility can inform selection of the most profitable bulls and cows for breeding dairy herd replacement. This can help reduce the carbon footprint of milk produced on the farm.

Grassland Management

Using the latest technologies to measure the amount of grass grazed is a crucial part of grassland management. The Connellys measure grass twice weekly to help keep track of quality grazing areas to ensure their cows can stay in the fields as long as possible from February to November. This has the added benefit of improving herd health and outdoor grazing also reduces the quantity of expensive grain and silage needed. The family also track soil fertility with soil sampling undertaken every two years.

Biodiversity

A hectare has been left aside to aid biodiversity on the farm alongside the placement of bird boxes and bat boxes throughout the farm. Wildlife includes pheasants and wild geese, with salmon spawning in a nearby stream. The Connellys have also planted hundreds of trees on their land to aid rewilding.



NDC Chief Executive & EMF Spokesperson Zoe Kavanagh; Aurivo Farm Profitability Specialist Majella McCafferty; dairy farmers Austin and Yvonne Connelly. Credit: Traction Media .

“If we don’t look after it, how do you expect the next generation to?”

Austin & Yvonne Connelly



How Plant Variety is Delivering a Greener Future for Irish Farms



Incorporating plants such as clover to grasslands can help reduce emissions on dairy farms across the country, explains Dr Deirdre Hennessy, Senior Research Officer at Teagasc.

Research is showing that including a variety of plants in the pasture can play a key role in helping Ireland's agriculture industry reduce its greenhouse gas emissions, protect the national herd from forced and drastic reduction and ensure that dairy farming continues to be a valuable and important part of Irish life.

Given that the benefits of plants such as clover, plantain and chicory in our grasslands are much more than environmental, and have a social and economic impact as well, it could be said that these plants are symbols of true sustainability.

White Clover and the Environment

Research at various centres across Ireland (including Teagasc, VistaMilk and UCD Lyons Farm) is showing that introducing white clover into our pasture can reduce the amount of chemical fertiliser that we use, increase the amount of herbage available to our cattle, and can improve milk yields per cow.

From a farmer's perspective, this trinity of benefits has a huge significance. Using less fertiliser saves money and time; improving productivity increases incomes; and Irish agriculture's overall environmental impact is mitigated by the reduction in greenhouse gas emissions (nitrous oxide) stemming from the chemical fertiliser.

White clover introduces nitrogen into soil naturally from the atmosphere and fixes it there; the cows find it palatable; it increases feed quality in the summer and it helps increase the amount of milk produced per animal. This means farmers who grow clover amongst the grass in their fields are helping reduce the carbon hoofprint of the dairy they produce.

Going by the numbers – the correct and managed introduction of clover onto grasslands can reduce farmers dependency on nitrogen fertiliser from an average of 250 kg nitrogen per hectare for grass-only to 150 kg nitrogen per hectare, effectively reducing usage by up to 40%, without any negative impact on the total herbage (grass and clover) yield. Studies have also shown that, in some instances, clover can increase herbage yield (the food cows eat) by 1-4 tonnes per hectare.

Biodiversity and Water Quality

Plantain is another species with the potential to have a real impact on dairy farming's environmental hoofprint. Research from New Zealand is indicating that plantain (a plant that is native to Ireland) can reduce the amount of nitrogen excreted by cattle, affecting both total emissions as well as the amount of nitrogen in the soil.

It's not just all about emissions reductions, cost savings for farmers and more sustainable dairy for the consumer. There are biodiversity benefits to be gained from different plant species and there's the potential for water quality improvements to be had as well.

Obviously, less nitrates from fertiliser and less nitrogen excreted by cows means less chance of run-off into the country's waterways, while the plants themselves can provide an important source of nectar for insects that pollinate, including bees.

Sustainable Irish Dairy

For the consumer of Irish dairy products, there's reassurance to be had that dairy from grasslands which include a variety of different plant species – what are called 'multi-species swards' – is produced to the same high quality for which our country is famous – and is now more sustainable, with a lesser impact on the environment.

What all of this shows is that through proper grassland management (alongside other initiatives being researched and developed by teams across the country), we can prevent short-term calls for reduction in our national herd by demonstrating that Irish dairy has the tools – and is taking the necessary actions – to meet Irish agriculture's 2030 target.



(l-r) Diarmuid Cremin, 2021 Kerry Agribusiness Quality & Sustainability Award Winner; James O'Connell, General Manager Kerry Agribusiness; Pat Murphy, CEO Kerry Dairy Ireland; Sibeal Bird, Sustainability Lead Kerry Group; William Dennehy, Kerry Agribusiness Signpost farmer.

Kerry Group supporting milk suppliers transition to more sustainable farming

In 2022, Kerry launched Evolve, a €6 million dairy sustainability programme which will support the acceleration of science-backed sustainability actions and best practices across farms in Ireland.

With the focus now firmly on sustainability, Kerry is committed to working with suppliers to deliver on commitments and improve performance now and into the future. The initiative is a demonstration of the company's commitment to fulfilling their ambition to reach over two billion people with sustainable nutrition solutions by 2030 – with agriculture a key part of that goal.

Over 3,000 farm families across the southwest of Ireland will benefit from the Evolve initiative which will provide technical and financial support to the company's milk suppliers to help them transition to more sustainable farming practices. As a result of these changes, it is expected that there will be a very significant reduction in carbon and ammonia emissions, improvements in water quality and enhanced biodiversity.

Feeding a growing population while agricultural practices and dairy production are under environmental scrutiny is a huge challenge. Already one of the most carbon efficient dairy producers in the world, Kerry is committed to providing leadership in reaching science-based climate targets while ensuring the environmental, social and economic sustainability of farms, contributing to deliver a world of sustainable nutrition.

“Consumers globally want to consume food in a more sustainable way, and it is important to examine how we can deliver dairy in a better way for people and the planet. Our Beyond the Horizon sustainability strategy sets out ambitious targets and our dairy business is committed to supporting our milk suppliers in the adoption of sustainable actions. Our milk-suppliers are already amongst the most sustainable milk producers in the world, and we will continue to work with them to build upon that advantage and accelerate the enhancement of biodiversity and water-quality across our catchment and in reducing carbon and ammonia emissions.”

Pat Murphy, CEO of Kerry Dairy Ireland.

The programme rewards farmers for improvements in the following areas:

- Soil and fertiliser management
- Production efficiency
- Herd health
- Grass management
- Energy use efficiency
- Knowledge transfer

The Evolve programme is underpinned by the Teagasc Marginal Abatement Curve (MACC) which sets out proven, science-based actions that farmers can take to reduce on-farm carbon emissions. It is also designed to enable annual re-evaluation and updating of actions in line with legislative and scientific changes.

“Our ambition is to reach over two billion people with sustainable nutrition solutions by 2030. A central element of this strategy is a commitment to work with our suppliers to reduce emissions intensity by 30% across our supply chain. This dairy sustainability programme underpins our ambition to work with our milk suppliers in achieving these targets and in forging a sustainable future.”

Pat Murphy, CEO of Kerry Dairy Ireland.

Teagasc Signpost Programme - supporting a greener future

Launched in 2021, the Teagasc Signpost Programme - a partnership with agri-food organisations, set up to support and enable farmers to take climate action - is further expanding to support dairy farmers across Ireland to implement best-in-class dairy environmental sustainability practices.

The programme which aims to bring science to practice and ensure the adoption of emission reduction research and technologies at farm level is now working with 120 Signpost demonstration farmers (50 dairy farms) across Ireland with the support of 62 agri-food organisations.

The flagship sustainability initiative has recently launched the new Signpost Advisory programme designed to maximise the reach of the Signpost Programme. This new service will provide training opportunities to enhance farmer knowledge and skills, facilitate farmer-to-farmer learning, and ultimately aid farmers in understanding the changes they need to make to meet government-mandated climate targets.

When considering the different sustainability actions to take, Head of Signpost Programme Dr Tom O'Dwyer recommends that farmers start with easier actions first before expanding further.

“Once elements such as improving soil pH and using protected urea are implemented, farmers can work towards the more difficult actions like incorporating clover into grassland swards and improving breeding performance.”

Dr Tom O'Dwyer

“Farmers are becoming more and more engaged in learning how best to reduce emissions. By sharing best practice and guiding farmers, we can help one of the island’s oldest indigenous industries evolve for a more sustainable future.”

Dr Tom O'Dwyer

Check out the Signpost programme including demonstration farms in your area by visiting

Sustainability reports informing future actions

By now, all 50 Dairy Signpost Farms have received their sustainability reports for 2021. The data will help farmers make necessary changes and provide a baseline against which they can benchmark future reports. This network of dairy farmers plays two critical roles: adopting climate mitigation technologies as industry trailblazers and secondly, sharing their experiences with other farmers through farm walks, events, articles, videos, and in media.

National Agricultural Soil Carbon Observatory (NASCO)

This on-farm research project aims to deepen the understanding of soil carbon sequestration. NASCO will underpin the development of a carbon farming model that aims to reward actions that remove carbon and store it in our soils.

Farmer Case Study: Dermot Heaney, Co. Meath

Together with his wife Catherine and four children, Dermot is milking 250 cows at Kilberry, Navan, Co. Meath. As a Signpost demonstration dairy farmer, Dermot recently received his first sustainability report. The total carbon emissions for his farm in 2021 was 1,420 tonnes CO₂-eq with a carbon footprint of 0.90 kg CO₂-eq / kg fat and protein corrected milk (FPCM). “These are just the baseline figures for my farm. It’s the progress over the next few years in reducing these figures that will be important.” Dermot’s most significant challenge is to reduce total chemical nitrogen use on the farm while at the same time maintaining grass production. Incorporating clover is classified as one of the more difficult actions for farmers to implement but can result in increased forage production and quality with less nitrogen fertiliser.

Reflecting on the year, Dermot said, “My nitrogen use efficiency for 2021 was 23pc, which is low, but I am not surprised as I was using a lot of N last year. I am confident that the figure for 2022 will be substantially better, and my total greenhouse gas emissions will be down, given the big reduction in chemical nitrogen use and the increase in the use of protected urea.”

Dermot is conscious that reducing footprint is not enough without reducing total emissions. Removing 5% of the lowest producing cows from the herd in 2021 has taken the pressure off grazing, with total milk solids supplied in 2021 remaining the same for the farm. This has helped to reduce total emissions without negatively affecting total production. “It is useful to have this data for the farm: it’s hard to change what you don’t measure. Ideally all farmers should have access to yearly

Sustainable Nutrition



Dairy products offer a valuable source of nutrition and can be part of a sustainable diet for those engaged in sport and exercise. Dr Yvonne Finnegan, RD & Nutrition Consultant to the National Dairy Council explains how dairy can play a winning role.

Whether you are an elite athlete or a weekend warrior, the importance of nutrition for sports performance and recovery is well recognised. For sports nutritionists and athletes, eating sustainably is a growing consideration and the principles recommended by the Food and Agriculture Organisation of the United Nations remain relevant. Diets should be nutritionally adequate, safe and healthy; culturally acceptable and accessible; economically fair and affordable and environmentally protective.

Dietary recommendations tend to differ for athletes depending on the type of exercise, but in general, there is a focus on eating more carbohydrates as a source of 'fuel' for performance as well as consuming slightly more protein to support the recovery of muscle which is broken down during exercise. While much of the increased energy needs for sport can come from carbohydrates provided by plant-based foods (cereals, potatoes, rice etc.), the higher protein requirements can be provided through foods such as lean meat, fish, eggs, milk, cheese and yogurt as well as beans, lentils, nuts and seeds.

Recovery post-exercise

When it comes to muscle recovery directly after exercise, quality and timing of protein are important. Consuming approximately 20-25 g protein following an intense session is particularly useful for muscle growth and repair but certain amino acids (the building

blocks of protein) like leucine may also be important in this period.

Milk protein contains the full complement of essential amino acids including leucine and has been shown to effectively stimulate muscle protein synthesis post-exercise. Limited research so far shows that individual plant proteins are not as effective after exercise which may be due to differences in their digestion and amino acid composition. Consuming larger quantities of plant-based protein or blends may help overcome this but may not be suitable for some athletes who struggle to eat the quantities of food required and certainly more research is needed.

Refuel, Repair and Rehydrate

From a practical perspective for the athlete, milk is considered a natural, convenient, accessible and inexpensive recovery option. The effectiveness of milk as a post-exercise recovery option has been attributed to its natural nutritional composition, which assists in addressing the 3 'R's of post-exercise recovery:

- Refuelling of glycogen stores (the naturally occurring carbohydrate in milk (lactose) can kick off refuelling)
- Repair of muscles through high quality protein
- Rehydration (containing water and electrolytes)

It is also important to remember that the Department of Health recommendation for 3 daily servings from the milk, yogurt and cheese group (5 for teenagers) is related to calcium requirements for bone health and should also be met in athletes.

What is not always appreciated is that athletes also struggle when it comes to eating well. Lack of time due to busy training schedules, tiredness, gut discomfort, limited nutrition knowledge or cooking skills, and injury and sickness can all impact on their diets and hence on performance.

However, poor nutrition can have additional consequences, particularly for more vulnerable groups. Teen athletes need sufficient energy from food to grow as well as to fuel their sport, young active women are at risk of irregular menstrual cycles and poor bone health when in energy deficit and older athletes may require additional high-quality protein as their muscles become resistant to the effects of protein. For athletes, nutrition cannot be a minor matter when it comes to eating a sustainable diet.

When assessing the environmental perspective of sustainable diets, Ireland's dairy sector also stacks up. It is regarded as one of the most carbon efficient producers of dairy in the European Union owing to our grass based low-intensity farming model and temperate climate. Culturally, dairy foods have been an integral part of the Irish diet and recommended to athletes for many decades as a convenient, easily accessible and highly nutritious food. For these reasons, whether you are an athlete or fitness enthusiast, Irish dairy remains an important part of healthy sustainable diet to support sport and exercise.

Irish Consumer Research

Dairy remains extremely popular at mealtimes according to a survey of 1,500 Irish adults as part of research by the European Milk Forum.*

Consumers value the taste, quality and flavour provided by dairy products, continuing to trust and support one of the oldest indigenous industries in the country.

Zoe Kavanagh, Spokesperson for the European Milk Forum in Ireland and Chief Executive of the National Dairy Council said:

“A fundamental part of our national heritage, dairy clearly continues to be a treasured part of the diets of Irish consumers. It features prominently in households across the country and these research findings demonstrate the role dairy farmers play in providing healthy, nutritious and high-quality dairy products. Consumers hold our native dairy in high esteem with farmers such as the Connelly family in Tuam an excellent example of best-in-class local food producers.”

Ms Kavanagh said that while the research findings were positive overall for the dairy sector, consumers are conscious of the climate crisis and want to see continued improvement.

“A strong majority of Irish consumers (89%) consider dairy part of a sustainable diet, showing that the industry has demonstrated to consumers that dairy farmers across the length and breadth of the country are taking steps towards sustainability. The dairy industry needs the continuing trust and understanding of consumers as it continues to respond to the challenges that lie ahead.”

When considering dairy products



77%

value its healthy and nutritional benefits



66%

value the taste of dairy



92%

say dairy products play a role in their diet



66%

believe meals would be less enjoyable without dairy



69%

say dairy is vital to rural communities and regional economies

The European Milk Forum

The European Milk Forum (EMF) is a non-profit organisation which plays a vital role in driving the strategic development, management and exchange of integrated information initiatives on milk and dairy across Europe. Through a three-year EU funded campaign, “Dairy in a Healthy and Sustainable European Food System”, five national dairy boards in Belgium, Denmark, France, Ireland and Northern Ireland are working in collaboration to highlight the essential role of dairy in a healthy diet, while also reinforcing the dairy sector’s positive contribution to society and the environment through a sustainable, locally produced food system. Join the conversation on social media via: #SustainableDairyEU