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Dairy in a Healthy and Sustainable Irish and European Food System

This marks my final address on behalf of the European Milk Forum campaign "Dairy in a Healthy and Sustainable European Food System". The campaign has provided an important platform to educate, build awareness and deepen the understanding of the essential role of dairy in a healthy diet and simultaneously showcase the dairy sector's positive contribution to society and the environment.

Working with national dairy boards in Belgium, Denmark, France and Northern Ireland, has provided an opportunity to share best practice knowledge, ideas and developments in relation to the essential role of dairy and the work that is underway to respond positively to the challenges of climate change. It has also provided a wonderful platform by which to engage deeply with a host of stakeholders from across the Irish dairy industry, from our hard-working dairy farmers to agricultural scientists focused on developing evidence-based research and data to our dairy co-operative organisations.

As the campaign draws to its conclusion, it prompts reflection on the opportunities and challenges for dairy particularly in the context of the EU ambition to achieve Net-Zero emissions by 2050. I know from meeting farmers the length and breadth of the country, throughout this campaign, that they are fully committed to farming in the most sustainable manner possible and to ensuring the long-term viability of their industry.

Our temperate climate and grass-based low-intensity farming model provides our 17,500 family-run dairy farms with a strong advantage. It places our dairy farmers in an ideal position to continue to produce dairy products in the most environmentally sustainable manner possible and support our deserved reputation as one of the best dairy producing small nations in the world. The latest data from Bord Bia demonstrates[1] this with the industry generating exports valued at over €6.8 billion and shipped to 122 markets in the past year alone, representing a 33% growth on the previous year.

Findings from EMF research note that over 89% of consumers believe farmers can make the necessary changes to achieve climate action targets. This sentiment provides encouragement to Ireland's dairy farmers who are working hard to implement the latest environmental efficiencies while also remaining economically viable. Over 76% of consumers believe the industry should be supported to remain viable for future generations, a finding which also leans into the shared sense of commitment among dairy farmers, who regard themselves as custodians of the land, committed to leaving it in a better place for the next generation.

Our current weather conditions, nationally and globally, are continuous reminders of our changing climate, a fact which is front-of-mind for our dairy farmers and indeed wider industry. Dairy farmers are working hard to embed the very latest technologies into their milk production process and to apply best-in-class environmental practices on farms. They are attuned to the fact that they need to continue to innovate, to keep pace with sectoral wide changes and to account for consumer demands for sustainably produced products. In this season's publication you will learn of the practices implemented by Caroline Hanrahan, a sixth-generation dairy farmer in Ballyhooly, North Cork.

Research conducted on behalf of Dairy Industry Ireland[2] found that the sector intends to commit €192 million towards climate action and sustainability initiatives, with an ambition to achieve 25% emissions reductions by 2030. This multi-stakeholder approach, with dairy co-ops innovating at all stages of the production process, Agri-advisory bodies, researchers and academia collaborating, remains integral to dairy attaining climate action targets. Inside, we profile the work of the agriculture and food development authority, Teagasc, with latest research on the nutrient profile of milk produced by grass-fed cows and separately the potential of an additive to reduce methane emissions in Irish winter- milk cows. Such findings are important in the context of showcasing the strong value proposition of Irish dairy, among the most nutritious in the world and the work that is underway to provide workable and practical solutions to tackle emissions.

The key role that dairy plays as part of a sustainable diet is explored in more depth, with a particular focus on the significance of dairy among older persons. Studies are showing that early dietary interventions and the inclusion of milk, cheese and yogurt, can play an important contributory role to promoting better health outcomes. Such research showcases the essential nature of dairy, from a nutrient perspective and so too safeguarding longer term health outcomes.

Events such as Dairy Day 2023, hosted by the Irish Farmers Journal, is an important annual forum by which to share best-in-class knowledge from all sectors of the industry as part of a collective. The spirit of collaboration and sense of determination at this year's event was palpable and the European Milk Forum in collaboration with the National Dairy Council were pleased to have the opportunity to participate and engage directly with stakeholders.

Ireland's dairy farmers, as food producers are playing a key role, balancing the need for environmental efficiencies with maintaining a viable livelihood. Research conducted throughout the three-year campaign, reflects a strong awareness of the role of farmers as food producers with over three-quarters of consumers demonstrating a strong understanding of what this means, with the same figure citing the importance of the industry, culturally, socially and economically.

Our dairy sector is built on over 6,000 years of tradition, defined by quality, a commitment to excellence and sustainability, and most importantly underpinned by a deep resilience. As we progress the work to deal with the challenges of climate change, Ireland's dairy farmers will continue to play a full and active role, conscious of the importance of preserving a proud tradition and history but adapting and innovating to ensure relevancy into the future.

Zoe Kavanagh,

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

Inside

[1] https://www.agriland.ie/farming-news/irish-dairy-worth-e6-8bn-shipped-to-133-markets-in-2022/

[2] https://www.rte.ie/news/business/2023/1025/1412964-dairy-report/

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Dairy Day

Dairy Day 2023 showcasing the role of Irish dairy

The European Milk Forum (EMF) in collaboration with the National Dairy Council (NDC) were pleased to support this year's Dairy Day in partnership with the Irish Farmers Journal with over 5,000 visitors attending the hugely anticipated event at Páirc Uí Chaoimh stadium in Cork. The first in-person Dairy Day since 2019 brought together a host of industry leaders for a series of talks and seminars to discuss topics such as technical farming, dairy markets and family farming.

Dairy Day is regarded as the biggest dairy event of the year in Ireland and provides an opportunity for stakeholders within the industry to engage and share latest knowledge, learnings and insights on the opportunities and challenges for the sector.

The event provided an important platform for both the European Milk Forum and the National Dairy Council to showcase the work that is taking place to promote Irish dairy and Ireland's value proposition as a leading dairy producing nation. The EMF and the NDC were supported on the day by this year's Kerrygold and NDC Quality Milk Award (QMA) winner John Macnamara, Co. Limerick, along with NDC farm ambassadors Shane Fitzgerald and Caroline Hanrahan.

Speaking at the event, Spokesperson for the European Milk Forum in Ireland and CEO of the National Dairy Council Zoe Kavanagh, outlined how Irish dairy is striving to meet its sustainability targets and why it is among the most sustainable dairy producing nations in the world.

As part of the Actions for positive PR panel chaired by Irish Country Living writer and dairy farmer Janine Kennedy, Ms Kavanagh was joined by award-winning dairy farmers Shane Fitzgerald and Caroline Hanrahan, who provided first-hand insights on running a busy dairy farm and the environmental initiatives they have implemented on-farm.

Ms. Kavanagh highlighted the importance of hearing first-hand from Irish dairy farmers, like Shane and Caroline, who provide an authentic, fact-based view of Ireland's dairy industry and the sustainability measures being implemented on farms across the country.

"Hearing first-hand from Irish dairy farmers is the best way to promote Irish dairy at home and abroad. Our dairy farmers work from dawn to dusk all year-round to produce a top-quality product, while implementing sustainability measures to meet the challenges of climate change. This is why they provide the most genuine and honest view of the work Irish dairy farms are implementing to deliver a 25% reduction in emissions by 2030."

> "Everyone from across Ireland's dairy industry is pulling together to meet the environmental challenges we face. The sum of all the little things will make a big difference and the collaborative approach between all partners in dairy, with all working together will make the greatest impact."
>
> *- EMF spokesperson Zoe Kavanagh*

> "If we want more young people in farming, it's so important to get them on the farm, that's the gold standard."
>
> *- Shane Fitzgerald, dairy farmer and NDC ambassador*

Pictured at the Dairy Day 2023 panel on Actions for positive PR were (l-r) Janine Kennedy (panel chair) Irish Country Living writer and dairy farmer, Zoe Kavanagh, CEO National Dairy Council and EMF Spokesperson in Ireland, Shane Fitzgerald, dairy farmer, Caroline Hanrahan, dairy farmer. Image credit: Donal O'Leary.

Dairy Research

Milk from Irish grass-fed cows among the most nutritious globally

Researchers at the Teagasc Food Research Centre, Moorepark, Cork teamed up with Food for Health Ireland (FHI) for a study which examined the nutritional properties of Irish grass-fed milk. The study compared milk from Irish grass-fed cows to milk from conventional indoor-fed cows, finding that grass-fed cows produce some of the most nutritious milk in the world.

The research is part of the continued collaboration between dairy farmers and cooperatives, State and third-level research institutes, and Agri-Food and Technology companies seeking to positively impact the environment, animal well-being and the health of consumers through innovation and enhanced sustainability across the Irish dairy supply chain.

"Irish grass-fed dairy cows produce milk with higher percentages of omega-3 and conjugated linoleic fatty acids, than cows fed medium and low proportions of grass. The high grass diet also produces a significantly yellower milk, making Irish milk much easier to identify. This is because of the colour pigments in the grass which then pass through the cow and into their milk," explained Mark Timlin, PhD researcher at Teagasc Food Research Centre, Moorepark, who carried out the research.

Mark Timlin, PhD researcher at Teagasc Moorepark

"The levels of fresh grass fed to dairy cows in countries such as the United States, Germany, Austria and Denmark is significantly less than in Ireland," added Timlin.

The study[1] compared milk from Irish grass-fed cows with milk from conventional indoor-fed cows. Fifty-four cows were fed either a high-grass diet (typical in Ireland), a medium-grass diet, or a low-grass diet (commonly operated around the world). The results showed that cows with a high-grass diet produced milk with more omega-3 fatty acids.

Previous studies[2] have shown that Irish dairy's 'grass-fed' system results in lower carbon emissions, which provides a unique selling point on the international market, as consumers demand a 'greener product' that is nutritious, natural and sustainable. In Ireland, almost 17,500 dairy farms use a grass-based farming model and combined with our temperate climate, is a key factor in Ireland's global reputation as one of the most environmentally friendly-dairy producing nations.

Key Findings

83% *increase in omega-3 fatty acids*

141% *increase in conjugated linoleic acids (CLA)*

Highest levels *of unsaturated fatty acids*

Lowest levels *of saturated fatty acids*

1. Impact of varying levels of pasture allowance on the nutritional quality and functionality of milk throughout lactation was published in the Journal of Dairy Science.

2. A case study of the carbon footprint of milk from high-performing confinement and grass-based dairy farms was published in the Journal of Dairy Science 2014 https://doi.org/10.3168/jds.2013-7174

Farmer Focus

Caroline Hanrahan on her dairy farm.
Image credit: Claire Keogh

Dairy Farmer Caroline Hanrahan

Along with their five children, sixth generation dairy farmers Caroline and Ger Hanrahan operate a dairy farm of 350 cows near Ballyhooly in North Cork, supplying milk to dairy co-op Dairygold.

The Hanrahans are acutely conscious of their role as food producers and of the need to produce dairy products with sustainability front of mind. Like thousands of dairy farmers across Ireland, they have been working hard to implement environmental initiatives on farm and to ensure their production system is as environmentally efficient as possible.

Some of the measures Caroline and Ger are implementing on farm to improve sustainability include:

- **Use of clover**

  By incorporating clover into grassland management, the Hanrahans can reduce the amount of chemical nitrogen they need to spread on the farm. This also contributes to EU Green Deal targets aiming to reduce chemical fertiliser use as well as Ireland's Climate Action Plan.

- **Use of Low Emission Slurry Spreading (LESS)**

  With the help of a grant, Caroline and Ger secured the use of a new attachment for the back of their slurry spreader. This permits more targeted slurry spreading, with the added benefit of lower emissions as the slurry is applied closer to the ground than older methods. By carefully spreading during drier spells of weather, Caroline and Ger can also mitigate the risk of run-off into waterways throughout the farm, helping to improve water quality.

"The better the cow you have, the more sustainable it is. You're producing more milk and having to feed them less meal. It all plays a part in it."

- Dairy Farmer Caroline Hanrahan

Caroline Hanrahan's dairy farm. Image credit: Claire Keogh

Caroline Hanrahan, her dog and dairy cows. Image credit: Claire Keogh

- **Herd genetics**

  The use of artificial insemination helps develop a more efficient dairy herd that will emit fewer emissions. Specific traits and sex can be selected in the breeding process, aiding the removal of inefficient breeders and improving the overall EBI (Economic Breeding Index).

- **Hedgerow management**

  Trees and native hedgerows across the farm provide habitats for flora and fauna while also sequestering carbon. Hedgerows also have the added benefits of aiding flood control and improving water quality.

"By the end of the year we're going to have 30% of the farm sown with clover. There's a couple of different methods of doing it, you can over sow or you can sow in the clover when you're reseeding your paddocks."

- Dairy Farmer Caroline Hanrahan

Sustainable Nutrition

Marianne Walsh, Nutrition Manager
National Dairy Council

Healthy Ageing – at the heart of a sustainable future

Food security is coming under increasing pressure as the world struggles to adequately feed its growing population. Every night across the world, one in nine people go to bed hungry, while at the same time, one in eight adults are obese[1]. Poor nutrition is intrinsically linked to poor health, which in turn has profound economic and social consequences. These challenges are exasperated by climate change and the immediate need to prevent further global warming, in the face of a need for food system transformation. The World Health Organisation's Sustainable Development Goals are focused on tackling all of these issues, where 'a better future for all people', 'zero hunger', and 'better health and wellbeing' are among the key goals[2].

These Sustainable Development Goals indicate that as more people are living longer, healthy ageing must form a key component of the agenda. With this, 2020-2030 has been recognised as the Decade of Healthy Ageing[3]. Ireland is aligned with this focus and in June this year, the Department of Health published its first set of dietary guidelines specifically for older adults, 65+ years[4].

One point of differentiation between these new dietary guidelines and those for younger adults is that the daily servings of dairy have been increased to 3-4, for older adults (for adults 18-65 years, the standard recommendations of 3 servings per day remains the same). An increase in dairy may seem surprising given the common narrative around animal foods and the environment – however, as research on sustainable diets deepens, it is becoming clear that dairy can make an important contribution.

Dairy foods such as milk, yogurt, and cheese, are naturally rich in a wide range of nutrients which are important for health, such as bioavailable calcium and high-quality protein for muscles and bones; B vitamins for energy metabolism and immune function; and iodine for thyroid and cognitive function. These attributes are particularly important for an ageing population, where good health and independent living are associated with strong bones and muscles, and the prevention of cognitive decline. Taking dairy out of the diet would leave many nutritional gaps, which are not easily replaced with alternatives. For example, non-dairy alternative drinks do not have the same nutrient profile and only 20% of those currently on the market are fortified with iodine[5].

A recent research trial in Australia provides scientific evidence to support the health and economic benefits of dairy in the diets of older adults[6]. The study involved a simple dietary intervention, whereby 7000 residents across 30 nursing homes were given an increase in the amount of dairy they consume each day. It found that residents who consumed 3.5 servings of dairy per day, were associated with a 46% reduced risk for hip fractures, following the 2-year study.

The authors of the study attributed the findings to the additional calcium and high-quality protein found in dairy foods. They then calculated the cost-saving potential to their health spend if the dietary changes were scaled nationwide, and the fracture prevention potential was estimated to equate to AU$66,780,000 (equivalent to €39 million).

With an estimated 30,000 osteoporosis-related hip fractures a year in Ireland, the prevention of age-related bone and muscle mass has never been more important. As fractures account for 2% (around €400 million per year) of the overall health costs here, the Australian study offers hope for transferrable cost-effective solutions. Indeed, the new dietary guideline to increase dairy servings per day, provide a step in this direction.

However, it is important to note that adherence to dietary guidelines in Ireland is poor. Currently, the Irish National Nutrition surveys indicate that only 5% of teenagers, 13% of adults and 3.5% of older adults reach the dairy recommendations for their age group[7]. Therefore, oversimplistic advice to reduce animal foods may push intakes even lower.

Sustainable healthy diets are a complex issue. It must be taken into consideration that animal foods span a broad category and the evidence shows varying nutritional and environmental impact. Healthy ageing is largely determined by setting strong foundations at key stages of development and this is particularly relevant when considering the teenage years, which are the most crucial stage for lifetime bone development.

As we strive to meet the World Health Organisation's Sustainable Development Goals, the evidence to support dairy's role across the life span as well as in a sustainable food system should not be dismissed.

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Dairy Innovation

Methane Research in Grazing Dairy Systems

Researchers Ben Lahart and Hazel Costigan at agricultural and food development authority Teagasc, discuss two significant research projects that are underway to address the issue of methane emissions and the development of solutions for application on dairy farms nationwide.

Methane emissions from enteric fermentation are a by-product of feed digestion within the animal's rumen. In the agriculture sector, methane emissions from enteric fermentation account for the majority of greenhouse gas (GHG) emissions.

Given that the agricultural sector needs to reduce its GHG emissions by 25% by the year 2030 relative to 2018 levels, developing strategies to mitigate methane will be crucial to meeting Ireland's agricultural climate targets.

There are already several significant research programmes underway to examine the issue of methane emissions which account for the majority of greenhouse gas (GHG) emissions. Results from the VistaMilk project, which aims to better understand and mitigate enteric methane* output in Irish dairy systems, is showing that there is a seasonal nature to methane output from dairy cows at grass, with lower enteric methane emissions observed in the spring period.

"The lower methane emissions in the spring are related to high quality pasture during this period. As the grazing season progresses, methane output increases, in line with a deterioration in sward quality and an increase in the stage of lactation of the herd. When compared to methane values calculated using international default methane emission factors there can be a considerable difference between calculated and measured methane output," explains Ben Lahart researcher at Teagasc.

When all data from grazing dairy cows collected to date is accumulated, the methane conversion factor for Irish dairy cows is ~9% lower than that currently used within the national greenhouse gas inventory.

Ben Lahart, Researcher, Teagasc

"These results will allow for more accurate accounting of methane in the national inventory and will enable policy makers to make better and more informed decisions regarding mitigation strategies for methane in Irish settings," added Lahart.

While a greater understanding of enteric methane in grazing cows is important, it is also critical that solutions are developed to reduce methane output, explains Hazel Costigan, researcher at Teagasc.

Research internationally has demonstrated feed additives to be effective at reducing methane output when fed to animals that are housed and fed a total mixed ration diet. In these settings, the additives can be easily mixed throughout the total mixed ration, meaning they are present in every mouthful of feed that the animal consumes and as such, actively reducing methane throughout the day.

Hazel Costigan, Researcher, Teagasc

"At present in pasture-based systems, the most applicable method of feeding additives is through supplemental feeding in the milking parlour twice daily. This has the potential to limit the efficacy of certain additives as they must be continually present in the rumen in order to be effective," said Costigan.

A recent trial in Teagasc Moorepark with grazing dairy cows demonstrated that an additive effectively reduced methane by ~30% for approximately 2.5 hours following consumption during milking, which is comparable to reductions reported in total mixed ration feeding systems. After 2.5 hours, methane levels returned to normal with the total reduction in daily emissions being ~6%.

"One possible solution is to supplement non-lactating dairy cows with feed additives during the winter housing period to reduce enteric methane emissions from Irish dairy cows until an additive suitable for grazing systems is identified.

There are also solutions that are relatively easy to implement. Research demonstrated that an additive mixed throughout silage using a diet feeder and fed to non-lactating dairy cows was capable of achieving methane reductions of ~22% across a six-week dry period. This is something that can be easily done on farms that have a diet feeder.

While overall, the findings to date are positive, we would add that further work is required to develop these additives using technologies such as encapsulation, which may enhance their efficacy in pasture-based settings," concluded Costigan.

***This research uses pasture-based GreenFeed units to measure methane output. Cows are enticed to visit these units 2-3 times per day by offering a small portion of concentrate feed. When the cows enter the machine, air is sampled from their breath, which is then measured for methane concentration. These units are being used to profile the methane output of Irish dairy cows at grass, as well as to evaluate strategies to reduce methane output.*

Irish Consumer Research

New research is showing that 94% of consumers believe that the Irish dairy sector deserves its global reputation for top-quality products and environmentally efficient production process. While over 50% of consumers value the quality, flavour and nutrition provided by Irish dairy products, and continue to trust and support one of the oldest indigenous industries in the country.

The findings are from a survey of 1,500 Irish adults as part of research by the European Milk Forum "Dairy in a Healthy and Sustainable European Food System" campaign.

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

"The findings demonstrate that consumers nationwide have confidence in the steps Irish dairy farmers are taking towards sustainability, while a strong majority believe Irish dairy deserves its reputation for producing top-quality products in a sustainable and environmentally friendly way.

The dairy industry needs the support and trust of consumers as it continues to enhance milk production processes and respond to the challenges that lie ahead."

Dairy is a fundamental part of our national heritage, and the research shows that locally sourced Irish dairy continues to be an essential part of the diet of Irish consumers. Irish dairy is a mainstay in households across the country and latest research findings show-case the important role dairy farmers play in providing healthy, nutritious and high-quality products.

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**Statistics from the European Milk Forum National Research March 2023*

94%

Believe the Irish dairy sector deserves its global reputation for top-quality products

74%

Dairy is sustainable and economically important for society

76%

Dairy sector vital to rural communities and regional economies

65%

Dairy sector can feed the world in a sustainable way

50%

Value quality, taste and nutrition when choosing dairy products

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