

Milk Quality Conference Teagasc

January 2023

Fionnuala Malone
Senior Milk Quality Manager Tirlán
Technical Development Team

Tirlán in Numbers



Exporting
to over
80
countries



11 World class
processing facilities



80,000 truck loads of
milk (approx.)



Nutritional Solutions
and Specialised
Ingredients for infant
formula brands

Over
3.1bn
litres Milk Processed



5,000
Milk suppliers in Ireland



Partner to
some of the
world's leading
food brands



Living Proof is Glanbia Ireland's
commitment to farming, food
and the future. We have signed
up to Science Based Target
Initiative (SBTi), specifying
targets and timeframes for
reducing GHG emissions



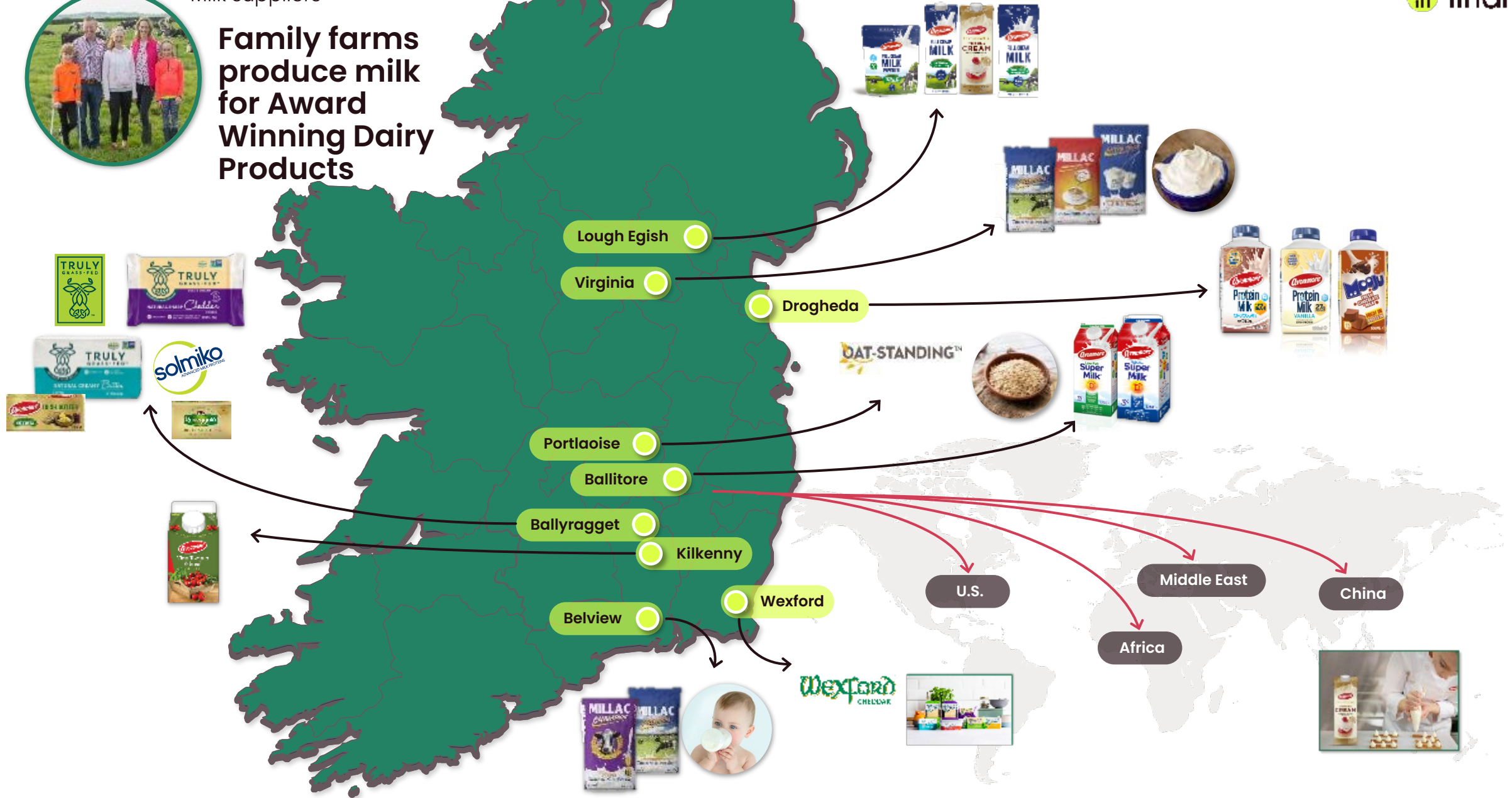
A wide range
of award-
winning
brands

#4,700 ROI & NI

Milk suppliers



Family farms
produce milk
for Award
Winning Dairy
Products



For dairy, independent verification across core measures is key to consumer trust



**Product
quality**



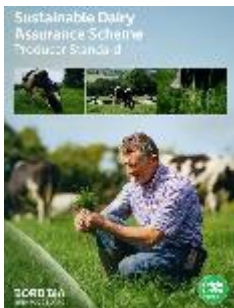
**Cow and milk
traceability**



**Environmental
sustainability**



**Soil and grassland
management**



**SDAS
Bord Bia**
On-Farm Sustainable Dairy
Assurance Scheme



**Origin Green
Gold Members**
and Sustainable Dairy
Assurance Scheme for two
successive years



Animal Welfare Approved
The only label that guarantees
animals are raised outdoors
on pasture for their entire lives on an
independent farm using
truly sustainable, high-welfare
farming practices



Certified
Kosher and Halal

Quality and Product Specifications

Driven by:

- Legislation and Regulations for Food Safety
- Customer requirements specific to product type
 - Ornu board resolution – end of 2018: remove all chlorine based detergents from farm and sites fully by 2020
 - Infant formula customers



Chlorate and perchlorate levels came into focus in **2016 – 2017**

- Due to risk factors associated with these residues

Companies and Industry process mapped contaminant risk factors (from farm to factory)

On farm sources – detergents, teat disinfectants and water source

In house risks – water source, detergents

Initially – there was not testing capacity for chlorates within Ireland, OR detergents available for use on farm and a significant investment and changes were needed at factory level esp. ref water treatment

- Testing capacity had to be built from scratch
- The industry spent three years until 2019 working on CF detergent ranges for on-farm use before beginning an en-masse switch to using CF
- This was not a simple task and this work is ongoing even now – targeted refinement of detergent ranges

Current Tirlán requirements nationally 2023

- Use of only chlorine free chemicals on farm
- Teat disinfectants must not contain chloride or chlorine dioxide (*or indeed iodine or QACs*)
- Compliance to Tirlán testing programme
 - In specification for TCM
 - In specification for Chlorate and Perchlorates

Suppliers are supported on the ground and our team understand that there will be queries and support needed on farm due to the change over

MQM will match the suppliers machine / tank system with best possible option taking into account history / water / size / supplier capacity

Driving change – is not a simple task



THIS IS AN ONGOING JOURNEY

*ALL IRISH PROCESSORS HAVE SIMILAR
REQUIRMENTS*

Chlorine free detergent – the journey on-farm

Tirlán journey

- *2010 – move from highly chlorinated products in factories due to TCM concerns and on-farm followed with recommendations to use content*
- *2018 suppliers with chlorine residue failures asked to change product*
- *2019 All suppliers asked to move to chlorine free on bulk tanks*
- *2020 All suppliers asked to use chlorine free detergents for tanks and machines*

Based on:

- 1. The success of 2019 strategy*
- 2. The testing and monitoring results*
- 3. Knowledge of the efficacy of the new ranges*
- 4. Customer needs*

- Its an ongoing journey
Every single day
Every single milk load
Approx. 80,000 truckloads
- It is CRITICAL that all milk is produced without chlorine use on-farm
- Every advisor on-farm must always focus on chlorine free for industry success
- There isn't room for chlorine in milk production nowadays
- Support is there one-on-one
- The message to farmers is that this is a key issue – and their individual behaviour influences how the entire industry is perceived

Testing

- Initially there wasn't testing facilities available with Ireland for chlorate analysis
- Teagasc established method and expertise and since then have rolled this out to partner labs
- Teagasc is now a reference laboratory for the industry
- Without testing capacity – the industry improvements would not have been possible



Knowledge Transfer Award

Teagasc, Independent Milk Laboratories, FBA Laboratories and Kerry Group secured the Industry Engagement Award, for an enduring research partnership through which industry consulted with Teagasc in relation to specialist expertise and testing for chlorate residues.

These residues present potential health concerns for infants, that could have a negative bearing on Irish infant formula exports currently worth €1 billion annually. As the sole Irish provider of accredited chlorate testing, Teagasc worked with the companies to establish new analytical laboratories and provided bespoke training to staff in operation of equipment, test methods and data analysis. This has resulted in significant increased testing capacity for Kerry Group, FBA and IML with the two latter companies having collectively tested 800,000 samples and exceeded €1 million revenue.

Influencers



Communication is key



What are the success factors ?



- ✓ Ornua forum
- ✓ Cross industry focus
- ✓ Joined up thinking
- ✓ Research led
- ✓ Science led
- ✓ Strong focus on quality of detergents
- ✓ Strong focus on hot water
- ✓ Laboratory



Can one farm make a negative impact?

COMMUNICATION AND SUPPORT



Thermiduric and TBC top five

Fionnuala Malone Senior Milk Quality Manager

This month's focus is on water – the ingredients of milk. It's essential that water is of good quality and is used in the right way. This is crucial to ensure your milk meets the required standards and to ensure your system is working for you in the long term.

Water temperature

Hot water (over 60°C) is used for cleaning and sanitising equipment. If this water is not hot enough, it will not kill the bacteria that cause mastitis. This is a risk to your herd and your system. The water should be at least 60°C. If it's not, you need to check your heating system and ensure it's working properly.

Water quantity

The water should be at least 10 litres per litre of milk. If it's less, the milk will be too thick and the bacteria will not be killed. This is a risk to your herd and your system. The water should be at least 10 litres per litre of milk. If it's less, the milk will be too thick and the bacteria will not be killed. This is a risk to your herd and your system.

Water softener

Hard water can cause scaling in your equipment. This can reduce the efficiency of your system and increase the risk of mastitis. A water softener can help to prevent this. It's essential to check your water hardness and to use a softener if it's over 100ppm.

CHLORINE RESIDUE UPDATE

Chlorine based products are used in dairies for disinfection and as a sanitiser. However, if not used correctly, they can leave a residue that can affect the milk. This is a risk to your herd and your system. The water should be at least 10 litres per litre of milk. If it's less, the milk will be too thick and the bacteria will not be killed. This is a risk to your herd and your system.

- Ensure you wash off all residues from teats before next milking.
- Only buy smaller quantities of detergent. Buying large stocks of detergent allows chlorine to build up over time even within nonchlorine detergents.
- Store detergents in dark areas, away from sunlight.
- Reset your cleaning regime by checking product strength and hot water temperature. Hot water is key. Your dumping temperature after a hot wash should be circa 52°C. Any lower shows that the start temperature is too low. Re-cleaning the machine to warm the pipes makes a big difference to wash temperatures. Hot washes should be short and sharp. Upgrade your hot water system. There are plenty of options available – Solar, Gas, Electric and Driy Geyser.
- Water quality is another area to focus on – get your water tested for EColi and Enterococci – if these are found – install a UV Filter. High levels of these in your water will make it harder for your milking detergents to be effective. High levels are unsuitable for drinking.
- Water softeners are another area to look at – if you have hard water – using a softener will ensure there is less build up of minerals throughout your system and allow detergents to work.
- Retaining detergent wash water is no longer the ideal in many cases. The solution should not be allowed to stagnate overnight if the wash troughs are unclear. Keep an eye on wall water quality. Contact your Milk Supply Manager to work through which wash regime is ideal for your system.
- Avoid using any heat disinfectants with chlorine or chlorine dioxide as active ingredients. These have been found to lead to chlorine levels building up.

Chlorine free

A reminder to all Glanbia Ireland (GI) suppliers that the only non-chlorinated detergents must be used for washing. Residue, acid should be considered for use in the final rinse cycle and given an added boost during the challenging summer months and therefore, can help to remove any build up. Currently customers require declarations from GI that no chlorinated products are being used, so we ask that all suppliers comply with this at all times to ensure that dairy products remain within specification for customers.

Test disinfectants that contain chlorine dioxide should not be used at all. They have been found both by Teagasc and by ourselves to be linked to elevated chlorine and perchlorate levels in milk. Use of these products is in breach of the Milk Purchasing Policy, and may jeopardise valuable customer contracts for premium products. Please ensure you check all products being used in your dairy to ensure they comply fully with the Milk Purchasing Policy.

The three product ranges we have found that work the best over time are the:

- Diversay Range
- Grassland Agro Range
- Kilco Range

The above products are available directly from Glanbia Ireland Agri Branches and on-line at Glanbia Connect. Contact your Milk Quality Manager for more information.

Ornua

THE HOME OF IRISH DAIRY



Chlorate failures – root cause

by Fionnuala Malone Senior Milk Quality Manager:

Glanbia Ireland requires all suppliers to remove all chlorine based detergents and test disinfectants from their milking systems. This requirement is in line with industry norms. Since January 2021, Ornua have implemented a full-scale ban on chlorine, as have infant formula companies. Glanbia Ireland has committed to our customers that we are using non-chlorine

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Search for products and services

Find a product or service

Find a product or service



To minimise chlorine residue in milk – Glanbia Ireland (in line with industry norms) has asked suppliers to remove all chlorine detergents from their milking systems.

FundEquip

low this requirement as they risk returns to supply key customers.

and any that have levels of Chlorate or rejected and parallel. One farm with an need to desegregating of a full batch

FINANCE IRELAND

- Don't use any chlorinated products to clean the milking machine or bulk tank. It is not suitable for use and no longer permitted.
- Using it periodically (e.g. once a month or just when you have problems) is not permitted.
- Drain all water out of your plant and bulk tank before milking, especially if on mains or group water.
- Use detergents up fully – if decanting into a clean drum for use of use from barrels – ensure you empty the drum to ensure old detergent isn't building up in the base of the drum.

Myth busting

There has not been a decrease in milk quality since moving to chlorine free. Yes – there can be periods where on farms and the Milk Quality Team is there to assist to solve these as they occur. However, this has occurred through the years even when chlorine was used. If you have a TSC, Thermiduric failure – don't reach for chlorine. Contact your Milk Supply Manager for support to deal with issues as they occur.

SOLAR POWER

WHAT HAVE WE SEEN AS THE SUCCESS FACTORS ?

CRITICAL BIG PICTURE FOCUS

- Communication
- Raw milk from cows has no chlorates or TCM
- Awareness of the importance of compliance
- Focus on industry outcomes
- Bigger picture focus – A WIN for Irish dairy
- Realising it is different product that must be used differently
- Testing and monitoring programmes

CRITICAL SMALL DETAILS FOCUS

- Communication
- Change the routine
- Hot water
- Sufficient water volume
- Consistent routines
- Good detergent choices
- Focus on routines
- Attention to details
- Minimise mains water impacts on farm

There are no short cuts



Influencers



Ongoing Communication is key

Highlight the success

- ✓ On-farm support
- ✓ Industry opportunity
- ✓ Ornua forum - cross industry focus with joined up thinking
- ✓ Research led
- ✓ Science led
- ✓ Strong focus on quality of detergents
- ✓ Strong focus on hot water
- ✓ Laboratory facilities

This has been a positive story



Q&A

Thank you!