A black cow and a black and white calf are shown in a straw bed. The cow is on the left, leaning its head towards the calf on the right. The calf is lying down, looking towards the cow. The background is a plain, light-colored wall.

# Unlocking Genetic Potential

through feeding more  
milk and optimising  
energy intake



**Giving calves  
the best start  
in life provides  
lifetime benefits**



**The first months in a calf's life are crucial in growing a highly productive dairy cow. It's a period that presents several challenges for dairy farmers.**

### **Science-based solutions for optimum dairy performance**

Science is a key driver in helping our customers run a more cost-effective and sustainable farming business. Trouw Nutrition has six animal research centres located throughout the world, an ingredient research centre and 50 long-term research collaborations with leading universities, research institutes and other organisations. We turn the scientific insights gained into innovative solutions that match the needs of farmers and their livestock.

Trouw Nutrition GB invest in local validation trials with partner farms to support the practical application of new innovations whilst gaining valuable insights from end users.

### **Increasing average lifetime daily production**

To continue to feed the ever-increasing world population in a sustainable way we need to utilise the full potential of each production animal. For dairy cows this means increasing the performance per day of life and in turn the average lifetime daily production by:

- Reducing the age at first calving
- Increasing milk production per lactation
- Increasing the number of lactations per cow

**LifeStart is a science-based platform that is dedicated to completing and communicating cutting edge research.**

LifeStart provides evidence-based best practice related to the critical period in the first months of life; it offers the science required to unlock the full potential of dairy cows.

LifeStart accredited guidelines for calf milk replacers ensure the nutritional and physical parameters are carefully considered to satisfy calf requirements, providing you with the confidence that they are safe to feed at an elevated level. This enables us to capture long term performance benefits of the developing calf. The ingredients used, and the processing technology applied, ensures that the finished products optimise digestibility to the calf as well as solubility ensuring stability in the solution.

**Unlocking Genetic Potential** through feeding more milk and optimising energy intake can be achieved on many farms. Following this strategy allows farmers to:

- Improve calf performance and development as well as supporting calf immunity and daily liveweight gain
- Provide a clear and sustainable return, through robust, resilient and high performing dairy cows
- Optimise Lifetime Daily Yield, key to improving sustainability in farming and reducing carbon footprint



**LifeStart accredited milk replacers are formulated to give you confidence for feeding at higher volumes**



# Feeding More Milk gives a clear and sustainable return, through robust, resilient and high performing dairy cows

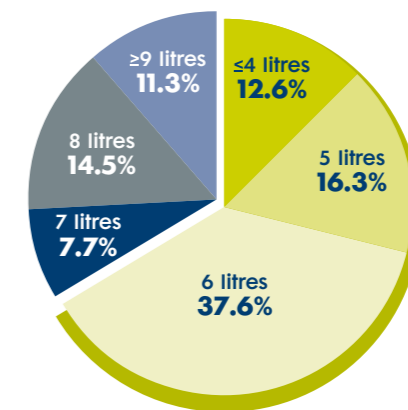


## LifeStart Science identifies that feeding more milk is a key factor in maintaining health and improving performance.

High growth rates in the first few weeks of life have been shown to demonstrate long-term benefits on fertility, survivability and lactation performance providing a clear return on the investment in early life nutrition.

The key scientific principle behind the LifeStart Programme and the observed increase in animal production is known as metabolic programming; whereby an animal's productive potential as an adult is influenced by the growth achieved early in life.

In order to unlock the full genetic potential of the animal we must ensure their nutritional requirements are satisfied during early life, this in turn will support the development of a robust and resilient calf that provides the foundations for lifetime performance.



Market research\* has shown that **more than 65% of farms** are only feeding 6 litres or less of whole milk or calf milk replacer to their calves.

Concerns regarding cost, historical feeding strategies and a lack of confidence to feed higher volumes all underpin the decision to feed a lower volume of milk during the pre-weaning period.

Optimising milk volume fed, particularly in the first few weeks of life, is a proven strategy to support optimum development in the early stages of life. In addition, it also allows the calf to promote natural feeding behaviours, depending on the flexibility of the feeding system. Although the cost of milk feeding may increase, the benefits realised provide a clear return on the investment.

\*Market research completed in 2022.

## Benefits of feeding more milk

Research trials have shown that by applying LifeStart scientific principles and feeding higher volumes of milk we can optimise calf, heifer and cow performance leading to multiple benefits for the farmer.



### Improved calf health

- Elevated feeding strategies can optimise development and integrity of the gastrointestinal tract
- Feeding More Milk can provide the energy required in order to minimise the effects of enteric challenges



### Improved calf performance

- Increased growth rates and optimised development
- Higher average daily weight gain – trials have shown up to 300 grams of extra growth per day during the pre-weaning phase
- The majority of organ development occurs within the first 50 days of life, therefore adequate nutrition is key to support optimal development



### Improved heifer performance

- Earlier breeding with improved conception rates
- Improved udder development to support future milk production



### Improved cow performance

- Improved production, fertility and survivability to 4th lactation
- Higher milk production – trials have shown an increase of up to 400 litres of milk production in the first lactation
- A lower culling rate during 1st and 2nd lactation
- Maintenance of body condition score during peak production



### Improved sustainability

- Improved efficiency by optimising Lifetime Daily Yield
- Increasing the average Lifetime Daily Yield by reducing age at first calving, increasing milk production per lactation and increasing the number of lactations per cow



## Practical considerations

Every calf rearing system is different. Housing set up, feeding system and chosen feed curve should consider the objectives of the farm and labour availability; this will ensure consistency in calf rearing. To ensure success, it is crucial that the science is applied with practical considerations in mind.

Moving to feed higher volumes of milk will provide clear benefits, however success will be based on some key factors.

### Intakes early in life

Increasing volumes to satisfy appetite in early life is a crucial strategy to optimise intakes overall. Young calves are driven to consume milk and allowing them to satisfy this behaviour early in the feed curve will support the reaching the peak of the feed curve as quickly and efficiently as possible.

### Feeding frequency

Elevated volumes can be achieved on many systems, including twice a day feeding systems. Research has shown that feeding more milk from birth does not risk insulin resistance as calves can adapt accordingly.

### Feeding method

Anecdotally drinking speed can influence the success of reaching higher volumes without challenges. Consider teat feeding in order to support more natural feeding behaviour and controlled drinking speed.

### Timing of feeds

Specific and consistent feeding times, with adequate time between feeds, are crucial when aiming to feed more milk. Clear feeding protocols can help to achieve this.

### Portion size

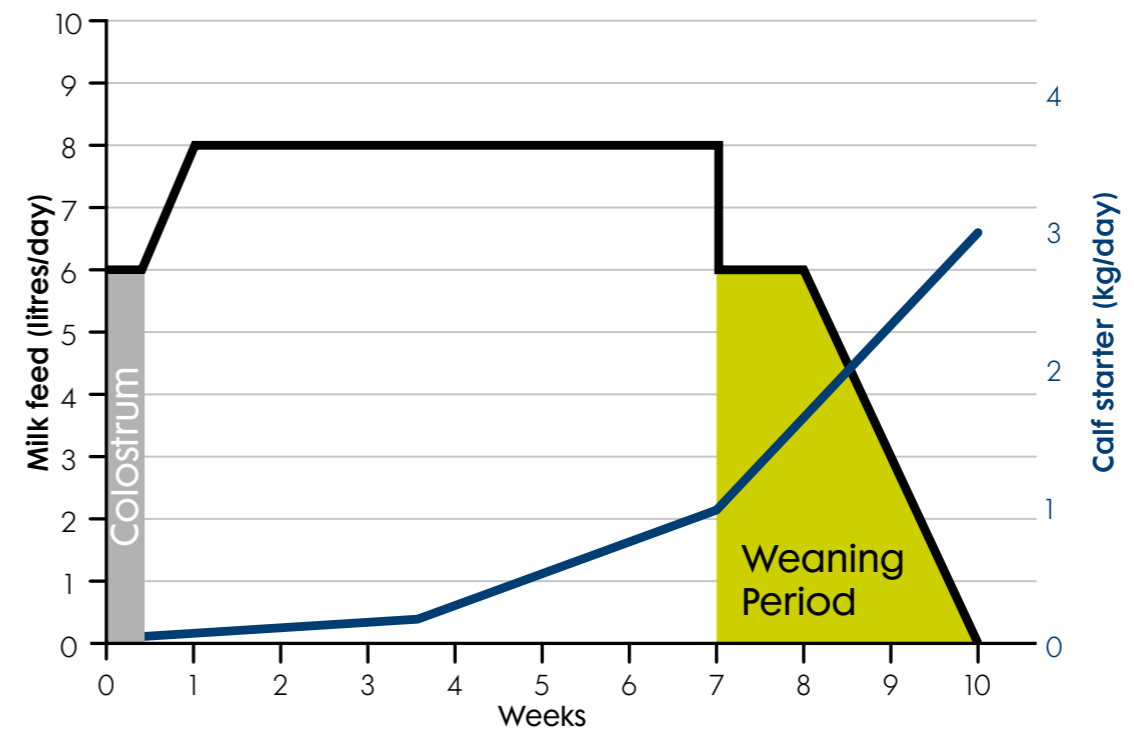
Remember portion sizes, depending on feeding schedule, can be flexible to your unit – meal sizes do not need to be equal and will be influenced by feeding system and frequency.

### Weaning strategy

A planned stepped down weaning strategy, that is easy to implement, is crucial when feeding higher volumes. Length of weaning and severity of milk removal should be carefully considered in order to ensure concentrate intake is sufficient so that stress is reduced and post weaning performance is optimised.

## Recommended feed curve

- Colostrum is the first critical step in calf nutrition. It is recommended all calves receive 4 litres of clean, high antibody colostrum within 4 hours after birth. This should be followed up by a further 2 litres within 12 hours of birth.
- If calves are easily consuming the allowance, increase volume to satisfy appetite. For example move from 8 litres to 9 litres if calves are consuming full volume.





**LifeStart Science indicates that there are benefits to be gained from having higher energy levels and lower osmolality in milk replacers.**

A focus on feeding for performance, not just growth, is an important consideration and will help to achieve the longer term LifeStart objectives:

-  **Optimal development**
-  **Resilience to disease**
-  **Longevity**

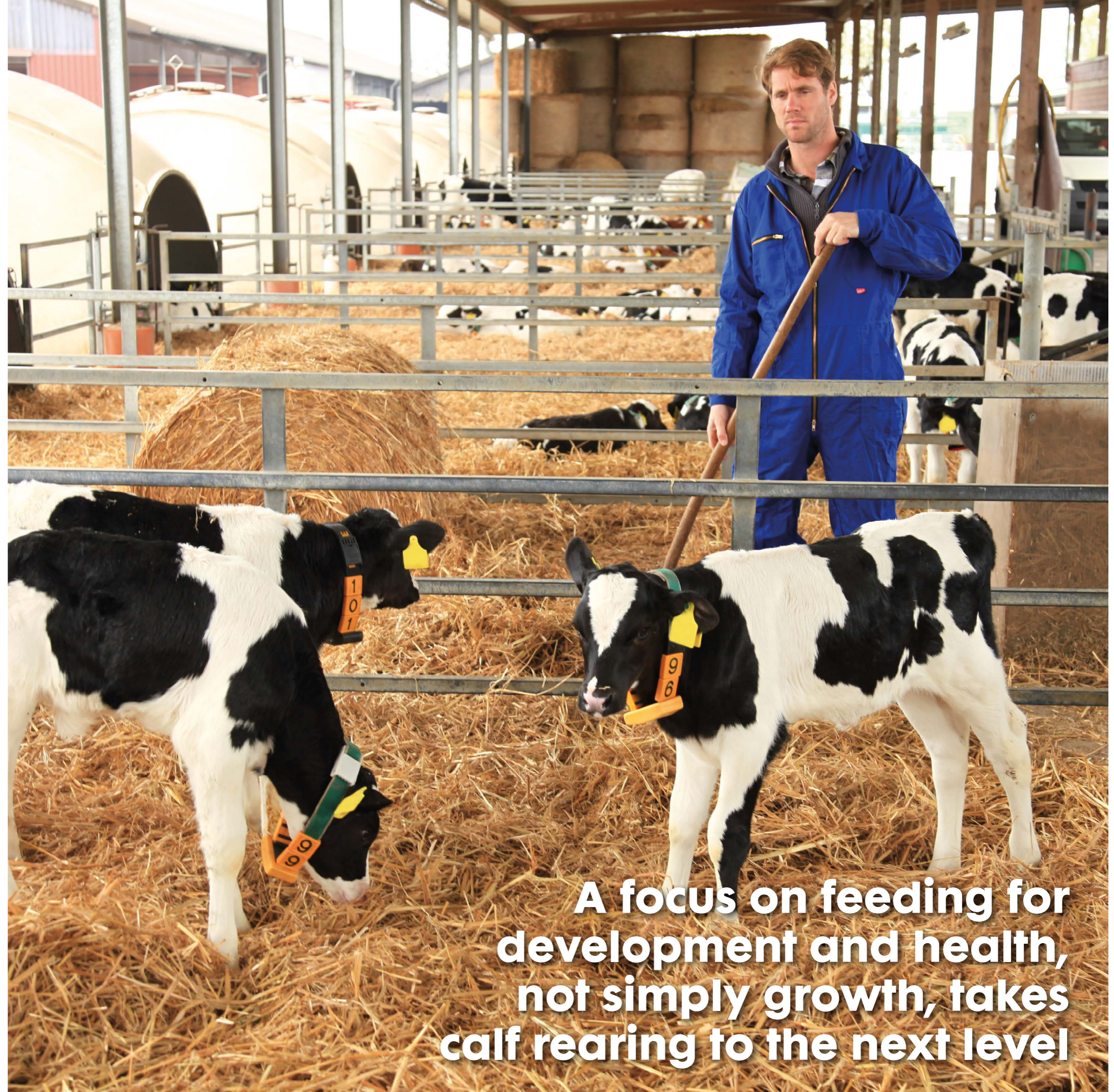
Feeding calves more milk to support higher growth rates is an important first step. However, feeding a specifically formulated calf milk replacer to ensure that the calf receives a balanced nutrient supply that provides optimal development whilst supporting the health of the calf takes rearing to the next level.

Inspired by mother nature it is important that we consider energy provision, in combination with energy source, for young calves.

Young calves need energy and optimal energy provision to ensure requirements are satisfied has multiple benefits, many beyond simply daily liveweight gain.

Fat is functional and is involved in multiple pathways in the calf, including:

- Immune competence and inflammatory responses
- Thermoregulation and ambient temperature management
- Energy homeostasis and optimal functioning



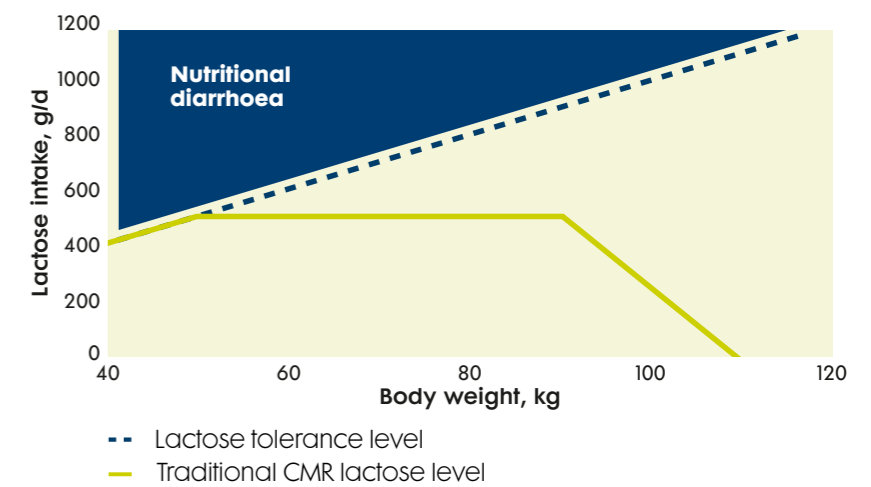
**A focus on feeding for development and health, not simply growth, takes calf rearing to the next level**



Osmolality measures the concentration of solute particles in a solution and is calculated by adding the concentrates of sugars and minerals in mOsm/kg of solvent.



Avoiding the risk of exceeding nutrient tolerance is essential in early life. The graph shows at what levels calves reach their nutrient tolerance for lactose. The green line represents a typical plane of nutrition using a typical calf milk replacer. Exceeding lactose tolerance can lead to nutritional diarrhoea – often seen when transferring from colostrum and commonly experienced in the first 14 days of life when fed traditional calf milk replacers.



Osmolality levels are a risk for calf scour. Lactose content in calf milk replacer is the main contributor to the final osmolality value. Feeding calves an elevated level of lactose, particularly in early life, can damage gut integrity, increase the risk of abomasal bloat (due to slower gastric emptying) and exacerbate diarrhoea severity in calves.

For these reasons **Energized Calf Milk** has been developed with a higher energy level and lower lactose and osmolality level to reduce the risk of nutritional challenges in early life, ensuring calves are provided a strong foundation on which to perform.

**Energized Calf Milk** was inspired using whole milk as the biological nutritional reference and aims to provide compositional consistency and superior energy density to every calf.



## Summary and conclusions

Feeding higher volumes of milk is a proven strategy to Unlock Genetic Potential, coupling this with **Energized Calf Milk** allows calf rearing to be taken to the next level.

Investing in early life nutrition gives a clear and sustainable return, through robust, resilient and high performing dairy cows. This in turn allows Lifetime Daily Yield to be optimised, which is key to improving sustainability in farming and reducing carbon footprint.

**LifeStart Science provides science-based advice that allows you to invest in the future of your herd.**



**Investing in early life nutrition optimises Lifetime Daily Yield, key to improving sustainability in farming and reducing carbon footprint**







Trouw Nutrition is a leader in animal nutrition and our innovation is driven by our global R&D network and dedicated local technical teams. Our purpose is “feeding the future” and we will achieve this not only by bringing products and solutions to our customers and farmers, but also by partnering with other key stakeholders to drive environmental and financial sustainability in the food industry.

LifeStart® is our early-life science pillar which brought the innovation of Energized Calf Milk to farmers for superior growth and calf development. It drives a continuous evolution of knowledge to challenge and improve calf nutrition and youngstock management best-practice.

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