START STRONG, FINISH STRONGER

YOUR PARTNER FOR PERFORMANCE

FEED FOR GROWTH

Healthy Calf Advice

FEED FOR GROWTH™

My Volac Milk Replacer Business Manager is: _____

My Calf Milk Replacer is: _____

Volac Milk Replacers Limited

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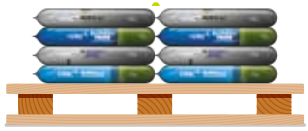
Email: queries@feedforgrowth.com

Scan me with your camera phone for contact page

Volac Milk Replacers and the milk circle 03

Feed For Growth Milk Replacers

- Highest quality range available
- Largest share of UK and Irish market
- Unsurpassed technical support
- Unique Imunopro base



Farm merchant

- A vital part of the supply chain
- Supplying education and training
- Delivering customer value

Farm

- Healthier animals
- Sustainable herds
- Better return on investment

Calf

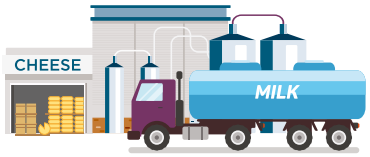
- Highest quality range of milk formulas available in the UK and Ireland
- Grow better cows with our Feed For Growth programme
- A range of tools and support for successful calf rearing

Cows

- More milk per cow
- Increased longevity
- Reduced mortality
- Improved Age at First Calving (AFC)

Milk

- More litres in the tank
- Improved milk production efficiency
- Less disease
- Less stress



Cheese

- Helping create value for money
- Market worth €2.5 billion annually

Whey

- Already using up to 50% of whey produced in England and Wales
- Equivalent to 1.1 billion litres of whey annually
- Long term commitment to the UK and Irish industry
- Equivalent to 10% of national herd

Factory

- Processing 3 million litres of whey every day from UK suppliers
- Responsible production of food and feed ingredients
- Unique facility
- Major local employer
- Sustainable biomass power station

We handle up to 50% of all the whey produced in England and Wales. We are proud of our interaction with, and support of, the UK and Irish dairy industry and the value we bring to dairy farms.

04 Milk Replacer

The Feed for Growth initiative is to help our farmers do the best for their calves and ultimately grow better cows.

By growing better cows we mean:

- More lactations (surviving long enough to become profitable)
- Sustain high milk yields
- Conceive at the desired time of breeding

Achieving an age at first calving of 23-25 months is key in terms of fertility, milk yield and survival over the first 5 years of a dairy cow's life.

Factors influencing growth rate:

- Colostrum feeding
- Milk feeding (type, amount, system)
- Housing (ventilation, drainage, bedding, pen design)
- Weaning management
- Post-weaning nutrition (concentrate, roughage, grazing)
- Vaccination / disease management

Monitoring growth

It's important to set growth targets on farm, and regular measurement of your herd is essential. Your heifers must be big enough at breeding time.

Growth rates cannot be determined by eye. Weight should ideally be monitored by calibrated electronic scales or a weigh band. Skeletal growth (e.g. height at withers) can be monitored with a height stick.

Scale readings

Electronic scales are highly accurate and, when set up correctly in a race or crush, the easiest method.

Correct use of a weigh band

A weigh band estimates live weight in kilos via measurement of heart girth. Accuracy is good due to the high correlation between weight and girth measurements

Skeletal growth

Height at withers is a good indicator of skeletal growth - it helps avoid serving small, fat animals too soon. It is best measured using a height stick.

Consistent measuring

Once you have an accurate measure of calf growth rates, nutrition can be adjusted accordingly and target growth rates achieved.

Benefits of calving at 24 months	23-25 mth AFC	26-30 mth AFC	>30 mth AFC
Days to conception, Lactation 1	117d	137d	170d
Days to conception, Lactation 2	111d	133d	144d
Total 5 year milk yield	22,477kg	20,605kg	15,777kg
% life in first 5 years spent in milk	45%	40%	34%
% cows starting lactation 3	70%	59%	50%

Cooke et al. Open Journal of Animal Sciences 3 (2013)1-12

Milk Replacer 05

A quality milk replacer is vital in giving calves the best possible start in life.

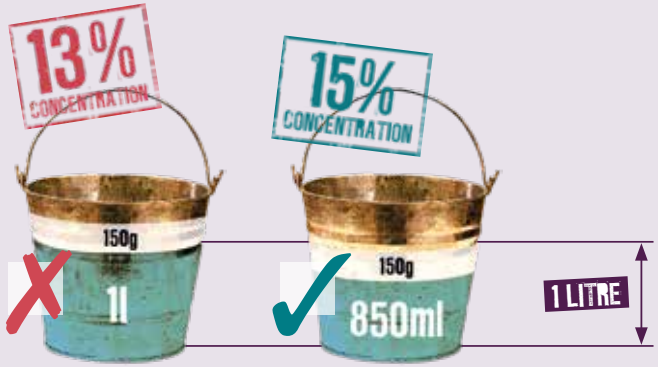
How to mix the milk

Concentration

To mix your milk correctly use scales to weigh the milk powder accurately. For a concentration of 15% solids, use 150g of powder to 850ml water to make up 1 litre of mixed milk. Using a full litre of water will lead to a weaker milk concentration.
Be consistent in your mix – you can use any concentration between 10 and 15% solids, but once you've chosen do not vary that concentration. Total milk solids fed will affect the growth rate of your calves.

Temperature

Milk should be fed at a consistent temperature of between 37°-39°C - a consistent temperature helps ensure a good oesophageal groove closure which channels milk into the abomasum. The spillage of milk into the rumen will increase the risk of scours, resulting in poor growth.

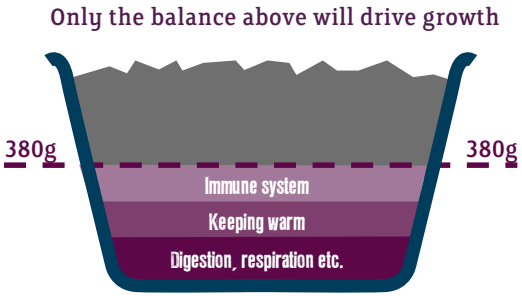


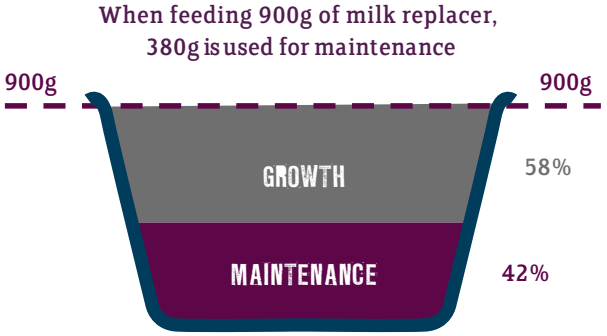
Water used to mix milk replacer should always be below 45°C - otherwise you'll damage the proteins which are essential to calf performance.

How much milk replacer to feed?

Feeding low levels of milk replacer will not achieve the necessary growth rates required to get heifers calving down at the correct weight at 24 months old. Furthermore to achieve a minimum growth rate of 0.7kg/day pre-weaning, a minimum of 750g-900g of milk solids per calf per day should be fed in at least two feeds.

The energy bank balance





Leaving 520g of milk powder available for growth within thermoneutral conditions

*A healthy calf in a low disease environment under thermoneutral conditions (15-25°C) Source: National Research Council (2001) Nutrient Requirements for Dairy Cattle 7th rev.

06 Calf Weaning

Weaning can be defined as the point when calves transfer from a liquid to solid diet. This is carried out successfully when the rumen has developed sufficiently to support the fermentation and digestion of solid feed.

Rumen development

Rumen development can be influenced by diet. A healthy rumen should have visible papillae and a dark colouration, resulting from the development of the rumen microbial population and large blood vessels associated with tissue growth, ensuring maximum absorption,transport and utilisation of nutrients.

Timing of weaning

The early intake of solid feed helps to condition the immature rumen and encourage it to develop so that the calf can eventually obtain a high proportion of its nutrient requirements from solid rather than liquid feed at an earlier time than would happen naturally.

Rather than weaning at a fixed time, it is best done when the calf is consuming a minimum daily target of 1.5kg per day of solid feed for 3 consecutive days. Remember a rapid increase in starter intake at weaning does not allow enough time for the rumen to develop - the amount of starter that has been consumed for 3 weeks before weaning is key for rumen development.

Water

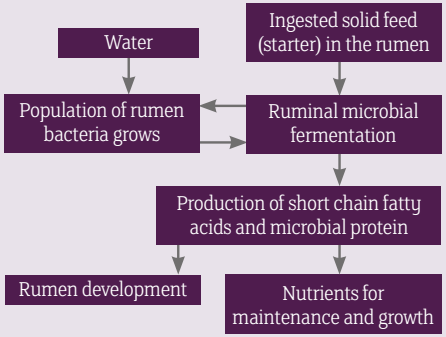
Irrespective of the type of rearing system used on your farm easy access to fresh water and calf starter from the beginning of the rearing period will aid earlier rumen development.

Forage

Offering forage alongside starter feed is also important for rumen development. Chopped forage (about 3-4 cm chop length) should be provided separately from the starter (i.e. do not mix the forage into the starter). If chopped forage is not available, provide long fibre by offering forage in racks (a separate source from the bedding).

The importance of solid feed:

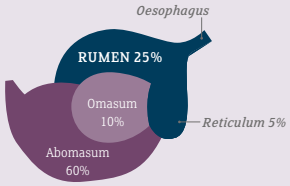
Rumen development is largely driven by the fermentation of calf starter by the rumen bacteria.



Stages of rumen development:

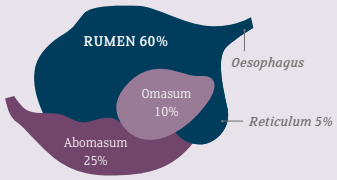
0-6 weeks

Milk is bypassing the rumen directly into the abomasum for digestion.



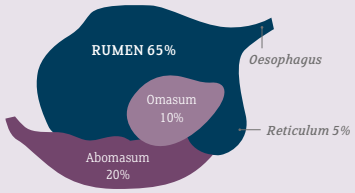
6 weeks

Consumption of solid feed and other factors encourages development of the rumen wall and rumen volume.



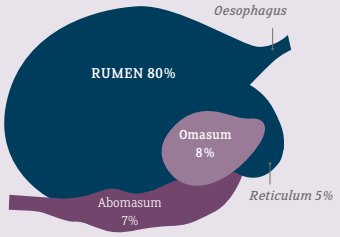
12-16 weeks

Post weaning the calf has a functional rumen which provides the calf with its nutrient supply.

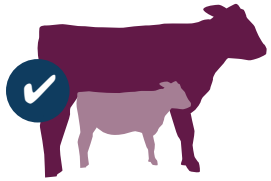


Mature ruminant

The rumen is now fully functional.



Weaning should be done gradually by reducing milk fed over a 21day period.



Double birth weight (minimum)

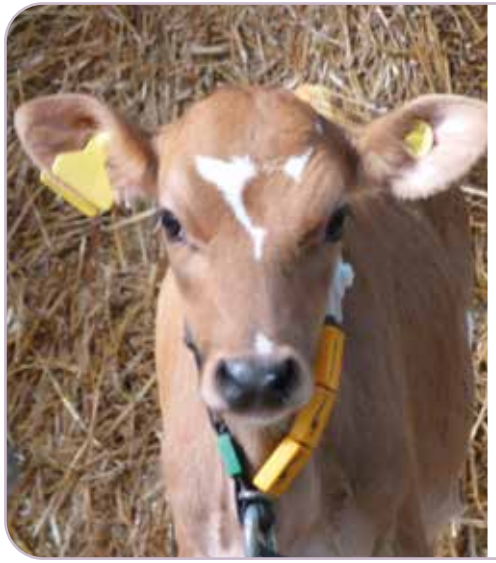
Gradually reduce milk intake

1.5 kg/d solid feed x 3 days (minimum)

Fresh water intake increased

The Healthy Calf 07

More than half of calves on UK farms suffer from disease before weaning; nearly all of this is due to scours and respiratory disease (RVC, 2013).



DON'T LET ILL HEALTH BECOME NORMAL – identify and act at the first signs of problems

Identifying common problems early gives you the chance to:

- Reduce the severity and duration of the disease[1]
- Reduce the risk of irreversible damage (e.g. lung damage)[2]
- Reduce harmful bugs in the environment[3]
- Reduce the spread of disease[3]

1. Check calves at least twice a day – are your calves healthy?
2. Identify common problems early – use the chart
3. Record and monitor early signs of disease
4. Treat if necessary - in accordance with your vet
5. Make preventative or corrective measures

DON'T LEAVE IT TOO LATE! REMEMBER, GOING OFF MILK IS A LATE SIGN OF DISEASE

ACT NOW
Implement the treatment plan agreed with your vet

1. Borderas, T. F., et al. (2009) *Journal of Dairy Science*. 92(9), 4549–54
2. Correa, M. T., et al. (1988) *Preventive Veterinary Medicine*. 6, 253–262
3. Windeyer, M.C., et al. (2014) *Preventive Veterinary Medicine*. 113(2), 231–240

8 Are you Feeding a Healthy Calf?

The aim of every calf and youngstock rearing unit should be to rear healthy animals with minimal mortality and optimal growth rates.

A healthy calf, in a warm and dry environment, has the best chance of achieving its full lifetime potential[1]:

A healthy calf uses its feed more efficiently

Calves use their feed in lots of ways. Firstly they must maintain their normal body functions, then they use energy to keep themselves warm and fight disease and finally energy left over can be used for growth.

A healthy, warm calf - ideal

A sick, cold calf - inefficient

A sick, cold calf has the same maintenance requirement. But it needs almost all of it's remaining energy to keep warm and fight disease so growth is slow and inefficient.

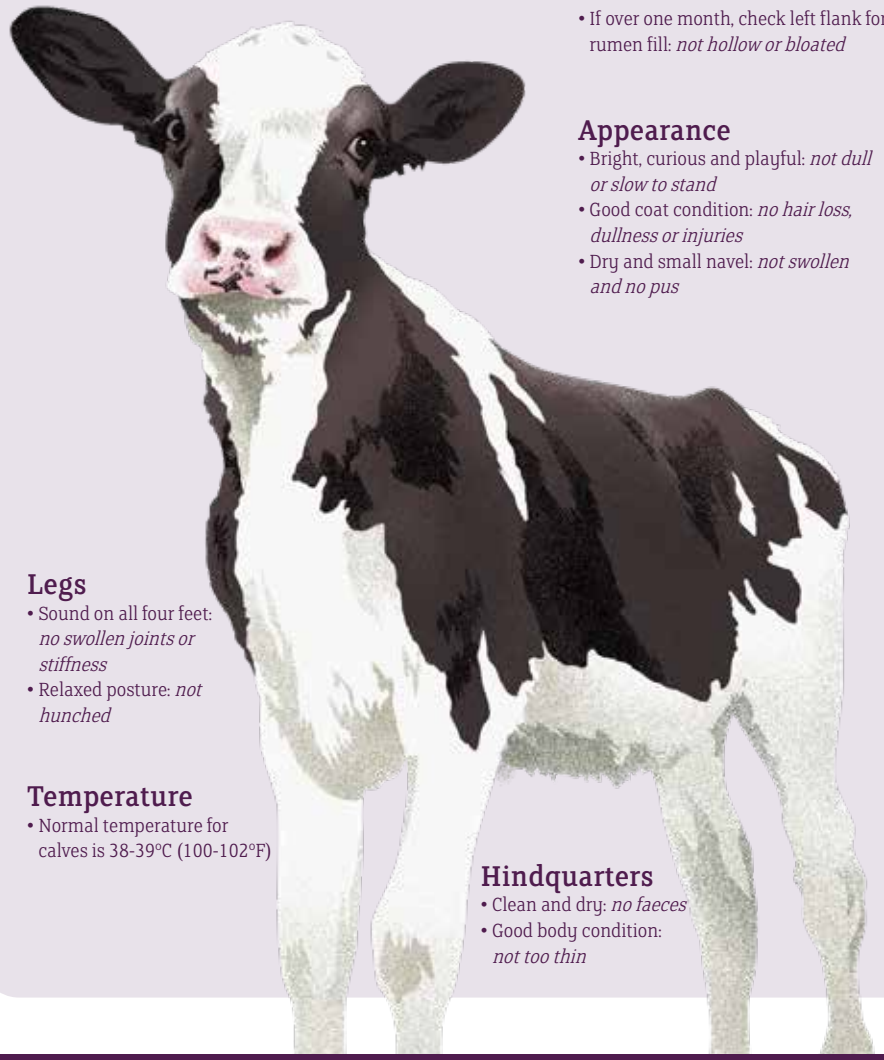
These examples illustrate a calf with a good feed allowance. Remember, a calf may not even have enough energy to keep warm or fight off disease, let alone grow.

Head

- Clear eyes and nose: *no discharge*
- Easy, slow breathing: *no coughing or wheezing*
- Alert ears: *not droopy*
- Well healed ear tags: *no pus*

Eating

- Keen to drink milk and eat solid feed
- If over one month, check left flank for rumen fill: *not hollow or bloated*



Appearance

- Bright, curious and playful: *not dull or slow to stand*
- Good coat condition: *no hair loss, dullness or injuries*
- Dry and small navel: *not swollen and no pus*

Legs

- Sound on all four feet: *no swollen joints or stiffness*
- Relaxed posture: *not hunched*

Temperature

- Normal temperature for calves is 38-39°C (100-102°F)

Hindquarters

- Clean and dry: *no faeces*
- Good body condition: *not too thin*

1. Bach, A. (2011) *Journal of Dairy Science.* 94(2), 1052–7

Whey Protein or Skim? 9

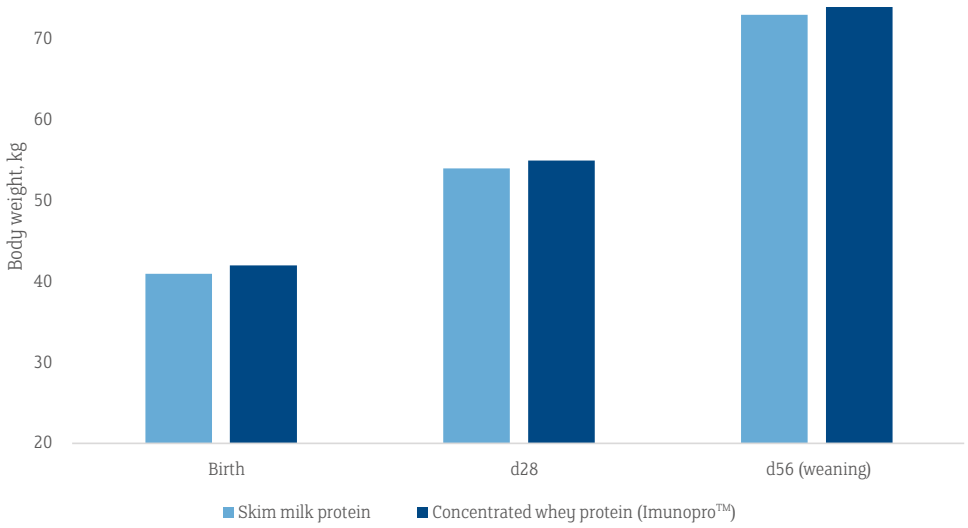
Which dairy protein is right for your calves? Dairy ingredients are the main source of protein used in Calf Milk Replacers –Whey proteins or Skim proteins.

What is the difference between Whey and Skim proteins?

Whey proteins do not form a clot within the abomasum, they pass readily into the small intestine and are easily digestible.

Q **Do both Whey proteins and Skim proteins deliver good calf performance and growth?**

YES Holstein calves fed milk replacer containing whey protein have the same growth rates as those being fed a skim-based product.



Ref: Volac Calf Trial, AFBI Hillsborough 2018/19

Remember it is the quality and processing of the dairy protein (of both whey and skim) that are used in a milk replacer which is the most important, not necessarily the type of protein. In addition, not all whey is the same - whey powder is lower in protein than concentrated whey protein (imunopro™)

Whey proteins contain high levels of immunoglobulins and amino acids which are crucial for calf development (colostrum contains 65% whey protein, which is three times the amount in whole milk). However, it is important to remember that all whey proteins in Calf Milk Replacer are not the same - quality dairy protein and specialised manufacture is key to capturing these all-important nutrients.

Concentrated goodness for your calves

Volac Milk Replacers uses low temperature evaporation and ultrafiltration to process our high-quality whey, this ensures that the bioactive compounds the calf needs for growth and development are not damaged. The result of this unique manufacturing process is imunopro™ which is unique and present in all Volac manufactured milk replacer.

imunopro™ contains high levels of immunoglobulins and amino acids, which are essential in immune system development and are vital for good muscle growth. imunopro™ also contains high levels of lactoferrin which has been shown to reduce scours. These bioactive compounds are not available in casein (skim proteins).

imunopro

10 Heifer Road Map

Target 1: Weaning

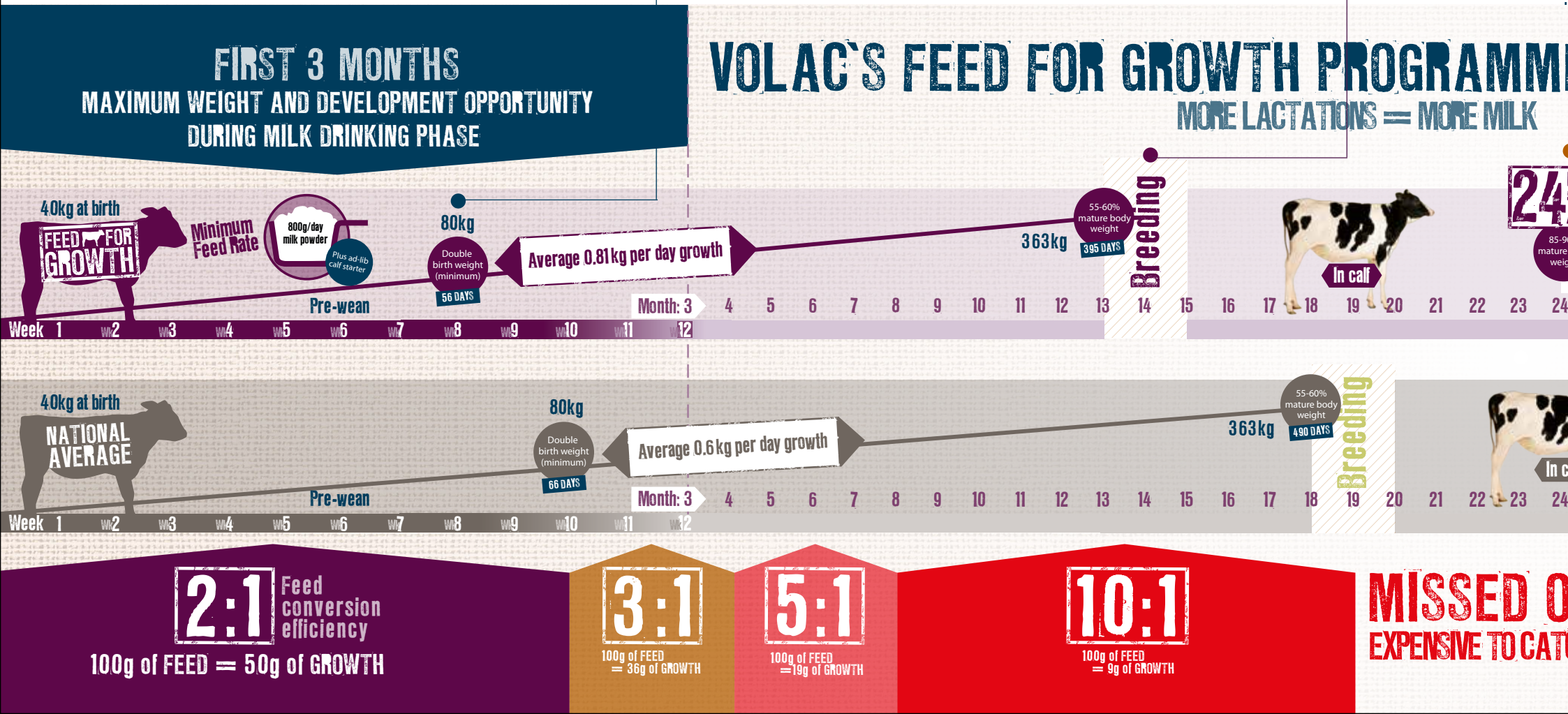
- Highest feed efficiency during this period
- Mammary cell and gut development
- Immune function development
- Only 42% of live born heifers reached 3rd lactation (RVC Study)

Target 2: Breeding

- Heifers must be in calf by 15 months if they are to calve at 24 months

Fit not fat

- Monitor growth rates on a regular basis – growth rate
- Heifers must be bred at 55%-60% of their mature bodyweight
- Breed on weight to ensure heifers are at optimal size at calving i.e. not too small and not too fat (fit not fat)



Target 3: Calving

- Age at first calving has a considerable impact on the number of replacements carried on a dairy farm.
- Less replacements means less feed, less time and less space
- Calving weight should be 85-90% mature body weight

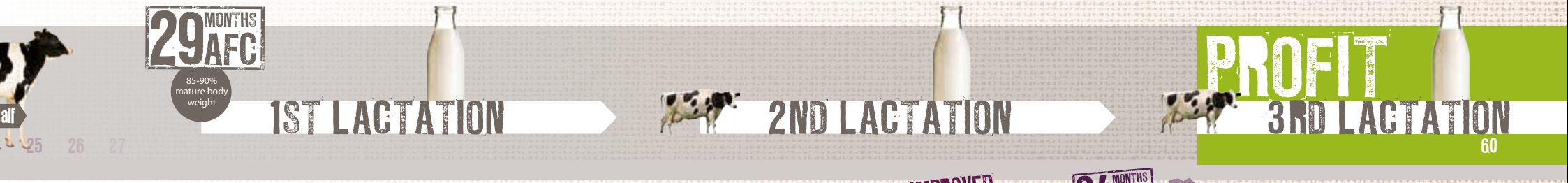
AFC 24 v AFC 30 Months
- Increased fertility
- Increased milk yield
- Increased longevity
- Becomes profitable earlier

Longevity:
70% reach 3rd lactation if AFC 24 months
59% reach 3rd lactation if AFC 26-30 months
50% reach 3rd lactation if AFC >30

Profit generation
- 10 months additional profit generation at 72 months
- Only 42% of live born heifers reached 3rd lactation (RVC Study)

E WILL MAXIMISE YOUR CHANCES OF GROWING BETTER COWS

BECOME PROFITABLE EARLIER | IMPROVED FERTILITY | IMPROVED LONGEVITY



OPPORTUNITY

CH UP

Ref: Bach and Ahedo (2008)

PLOT YOUR HEIFER ROAD MAP

Based on the first 5 years of the **Feed for Growth initiative** cows will be profitable for longer and have improved fertility

NATIONAL AVERAGE REF: NMR

12 What is imunopro™ ?

We take the goodness of milk and concentrate it. A combination of filtered, evaporated and gently sorted milk constituents are collected at low temperature from whey.

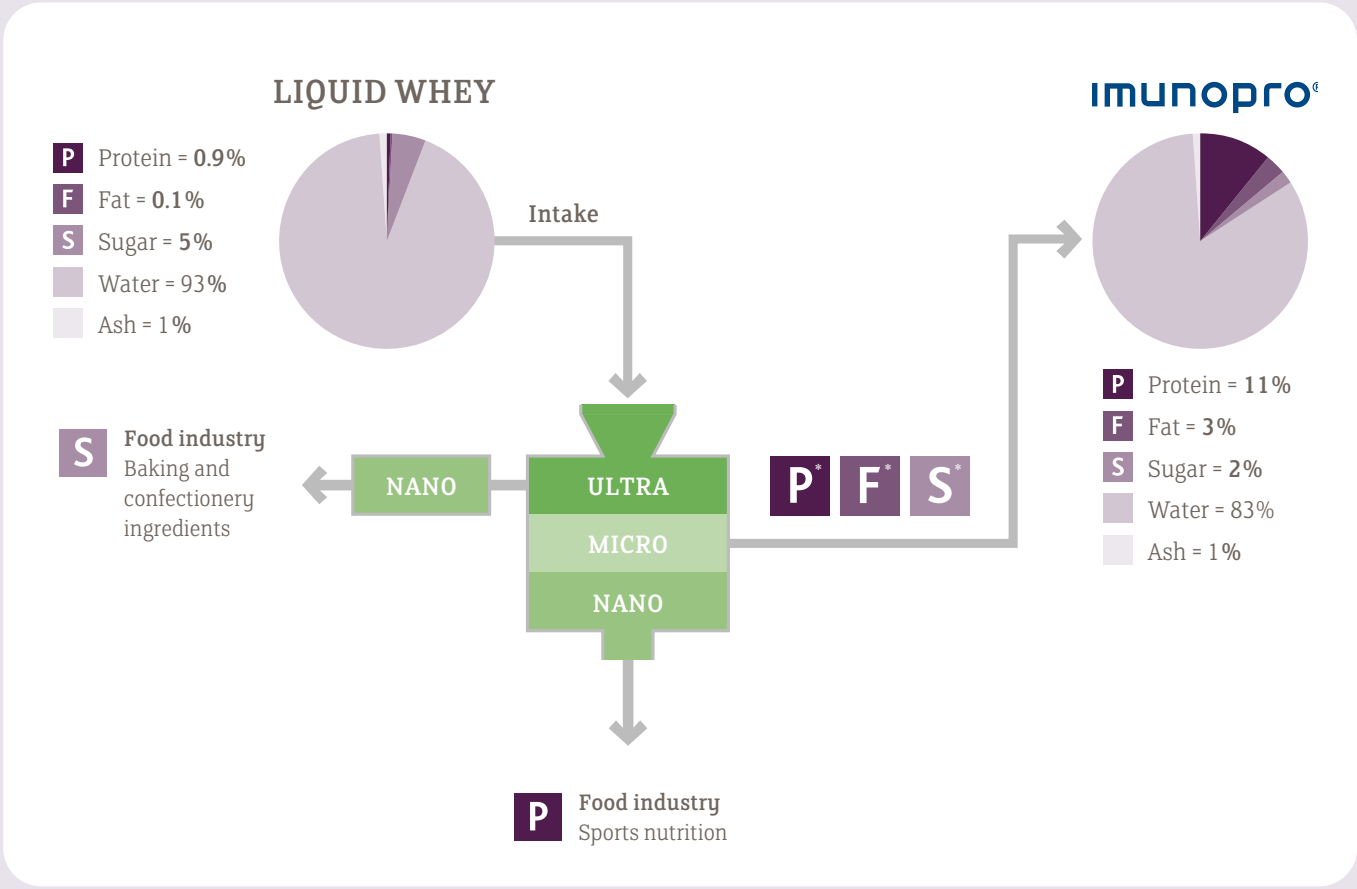
These include:

Proteins, **F**ats and **S**ugars, resulting in a highly nutritious bioactive complex known as

imunopro™

This unique process captures the goodness of milk, for the benefit of the calf.

The imunopro™ process



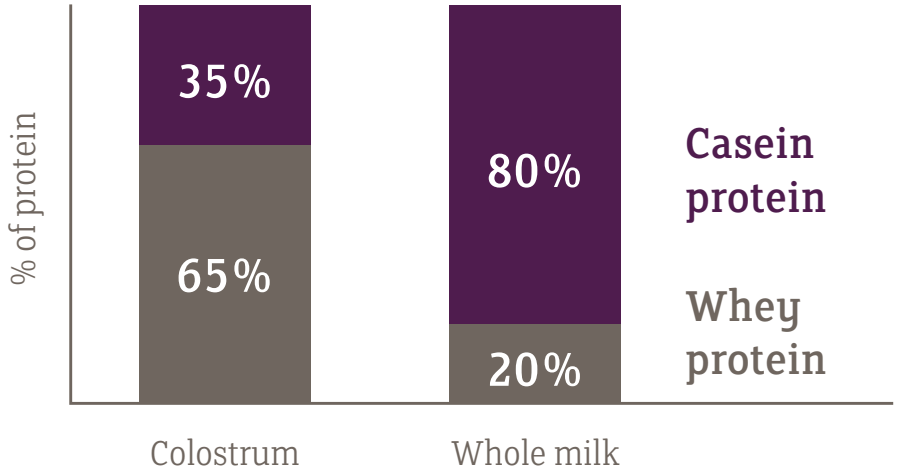
Imunopro™ is unique and is a concentrated whey protein and phospholipid base, packed with vital amino acids and functional proteins, fats and sugars.

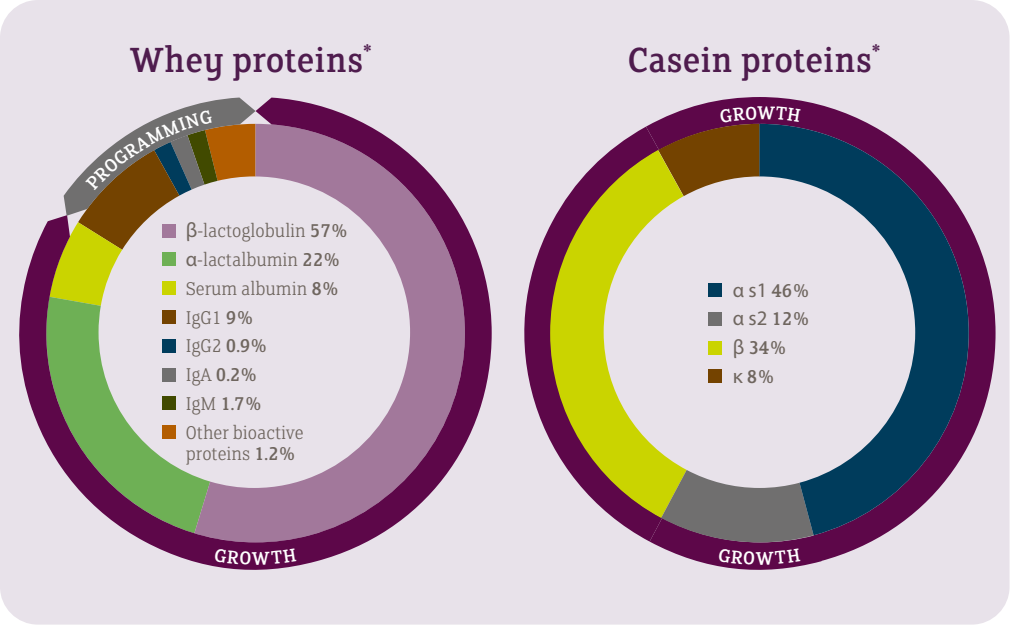
*High concentration of bioactive material

We take the Magic of Milk 13

The magic of milk is found in the whey – and we are experts in concentrating the goodness of milk for the benefit of the calf. Our unique processing takes all the benefits of Whey (including immunoglobulins and essential amino acids - which are all found in colostrum) and concentrates them to produce our unique Imunopro™ which is basis of all Volac Milk Replacers calf & lamb milk replacers.

Whey protein – fundamental for calf programming





Colostrum: contains 3x more whey protein content vs whole milk.

Whey - contains the bioactive content for calf success.

- The special components in whey are used to programme the calf for success – in terms of health, the immune system's pathogen control and speed of development.
- We concentrate the components found in milk **P** proteins, **F** fats and **S** sugars and use them as a base for our milk formulas – we call this base: imunopro™

*Farrell et al. (2004, J. Dairy Sci. 87: 1641-1674) and other sources

14 The Imunopro™ difference: the evidence

Protein

Amino acids for growth and development*

% OF AMINO ACID IN CRUDE PROTEIN

A vital amino acid for growth

Higher levels of key amino acids

	Milk	Skim milk powder	Whey powder	Imunopro™
Lysine %	8.1	7.5	7.8	9.4
Leucine %	9.7	9.6	8.6	11.0

Critical in driving the rate of muscle protein synthesis. It is the reason why concentrated whey protein is the protein source of choice for athletes.

Protein for health*

% OF CRUDE PROTEIN

	Milk	Skim milk powder	Whey powder	Imunopro™
IgG %	<1.8	<0.5	<1.5	>4.5

Crucial in early life immune development. We successfully collate these without damage in Imunopro for the benefit of the calf.

Lactoferrin – research findings

- Plays a vital role in innate defences
- Powerful iron binding antibacterial properties
- 2017 trial: supplementation to scouring calves
- Reduction in severity of episodes
- 50% reduction in mortality at 120 days**

Identified in Imunopro™ at elevated levels

*Average analytical data of ingredient after processing and drying. **Habing *et al.* (2017, J. Dairy Sci. 100: 3940-3948)

Health Supplements 15

As part of creating the most performance formulated products available, we include high quality nutritional supplements to support calf health and encourage good growth.

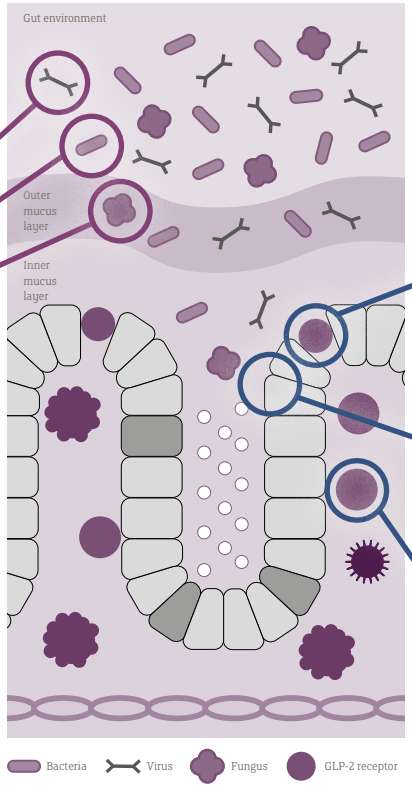
GARDION™

Derived from Garlic

- Antiviral activity
- Antibacterial properties
- Antifungal response

Benefits

- Enhances the function of the immune system
- Improves gut health



NUTRY-LYST™

Energy uptake

Stevia

- Drives GLP-2 production
- Increases glucose absorption
- Improves gut performance

Structure

Eugenol, Capsicum, Stevia

- Increases mucus production
- Improves villi height

Immunity

Capsicum, Anethol

- Increases B- and T-cells
- Reduces inflammatory response

Benefits

- Improves gut performance
- Improves nutrient absorption
- Decreases risk of diarrhoea

Vitamins and minerals

Name	Amount per kg feed
Vitamin A	25 000 IU
Vitamin D3	**10 000 IU**
Vitamin E	**500 IU**
Vitamin K3	3 mg
Vitamin B1	5 mg
Vitamin B2	3 mg
Vitamin B6	3 mg
Vitamin B12	60 mcg
Vitamin C	100mg
Nicotinic Acid	20mg
Biotin	50mcg
Pantothenic Acid	10mg
Iron	**100 mg**
Copper	10 mg
Manganese	**40 mg**
Zinc	50 mg
Selenium	0.4 mg

Important in the process of bone development and immune system. New level assists immune status of the calf in the face of a disease challenge.

An important anti-oxidant. Higher growth plane calves respond well to increased vitamin E.

Improving blood quality (haemoglobin production) and therefore oxygenation.

Vital for bone and joint development - especially in fast growing calves.

IMUNOGARD®

Imunogard® incorporates the established hydrolysed yeast culture Celmanax™ from Church and Dwight to help improve calf gut function and mitigate the effect of a number of harmful pathogens.

Proven hydrolysed yeast cultures not only provide readily digestible refined functional carbohydrates for the calf; they also have a recognised prebiotic function. Put simply, the inclusion of Celmanax™ feeds the calf's beneficial gut bacteria and helps bind them to damaging bugs, such as cryptosporidia, E.coli and Salmonella spp. This stops these harmful pathogens from binding to the gut wall and taking hold to cause disease signs such as scouring.

For example, independent scientific trials have demonstrated that calves supplemented with Celmanax™ shed three times less cryptosporidium oocysts than those which were not, thus helping to reduce the spread of cryptosporidiosis. The Celmanax™ supplemented calves also had improved faecal and dehydration scores.

Imunogard® also benefits from the inclusion of other beneficial health supplements. For example, butyrate for its anti-inflammatory effects and ability to stimulate gut enzyme production, and the garlic-derived ingredient Gardion – known too for its natural pathogen inhibiting effects and ability to enhance immune system function.

Imunogard® should be mixed at the rate of 150g in every litre of water and be fed to calves according to Volac Milk Replacers standard growth curve recommendations.

Provides the materials for growth, primes the immune system and supports in pathogen control while developing the future of your herd.

CELMANAX™

Celmanax™ is a hydrolysed yeast culture, including this within a complete diet for calves improves gut health by feeding the beneficial bacteria (prebiotic function).

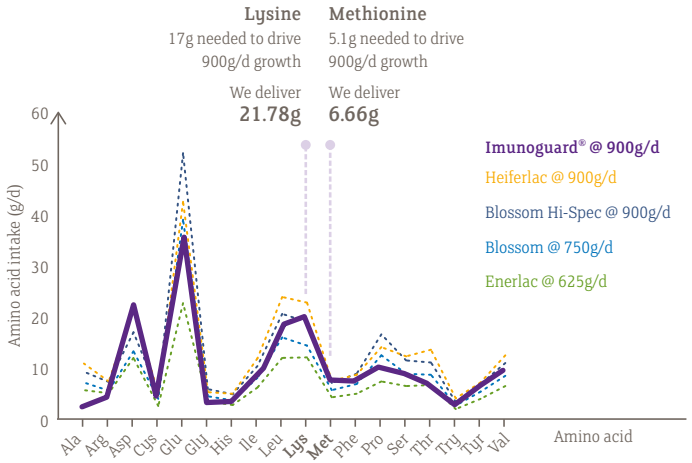
Celmanax™ could potentially contribute to decreasing medical costs by binding to the harmful pathogens (including E.coli and Salmonella) thus preventing them from attaching to the intestinal wall and taking hold.

Due to the enzymatic hydrolysis process that breaks down the yeast cell wall, it makes the Refined Functional Carbohydrates (such as mannose and beta-glucans) readily available for use by the calf.

Calves which are supplemented with CELMANAX™ shed three times less crypto oocysts than those which were not, thus helping to reduce the spread of disease they also had improved faecal and dehydration scores. (J Anim Sci *2009 Vol. 87, Church and Dwight*).

IMUNOGARD®

- 100% Dairy Protein
- 23% Protein: 21% oil
- 23% Protein to lay down the building blocks for maximum growth and development
- 21% Fat to allow for more energy to be metabolised by the calf rather than using it to fight off disease pathogens



Elevated levels of essential acids including Lysine and Methionine which are needed to ensure optimum calf growth and development

imunopro™

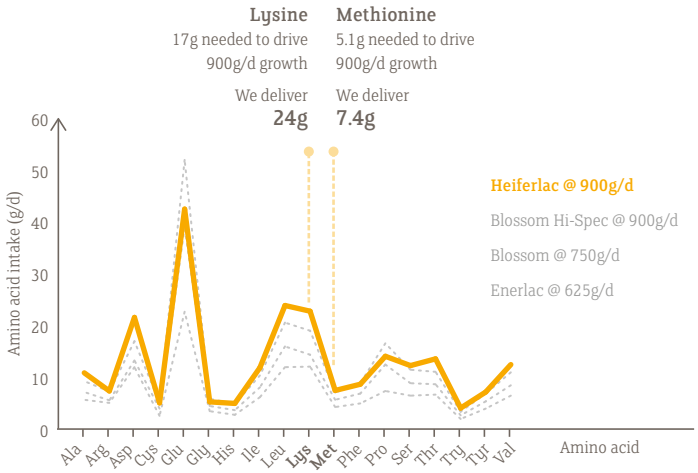
Amino Acid	g per 900g/d
Lysine	**21.78**
Methionine	**6.66**
Cystine	4.68
Threonine	14.22
Histidine	3.78
Leucine	20.52
Isoleucine	12.42
Glutamic Acid	34.74
Arginine	4.95
Serine	10.35
Aspartic Acid	21.51
Glycine	3.69
Alanine	1.53
Tyrosine	6.03
Proline	12.42
Valine	11.52
Phenylalanine	6.3
Tryptophan	3.6

HEIFERLAC®

When only the best will do

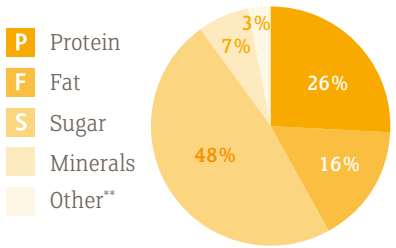
DESIGNED TO DRIVE 900G GROWTH PER DAY*

- High imunopro™ content for long term performance
- Maximum programming and maximum growth
- Ideal for Pedigree and high EBI herds
- Gardion health package
- Highest leucine level



imunopro™

GARDION™ BUTYRATE



Energy
17.7 Mj ME
at feed rate of 900g/d

*Based on recommended feeding rates with access to ad lib starter feed and water

**'Other' includes moisture, vitamins, residual carbohydrates and feed additives

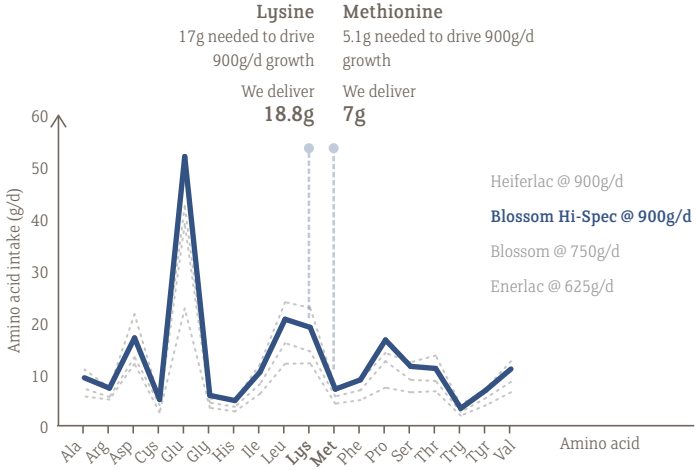
BLOSSOM®

HI-SPEC

When you need high performance

DESIGNED TO DRIVE 900G GROWTH PER DAY*

- The considered solution for large herds
- Developed for growth, for the business producer
- Very high imunopro™ content
- Nutry-Lyst health package
- Very high leucine level



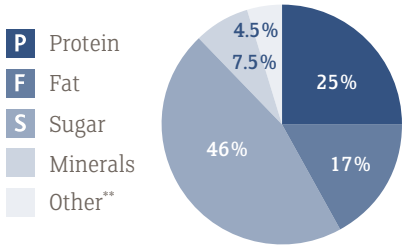
*Based on recommended feeding rates with access to ad lib starter feed and water

**'Other' includes moisture, vitamins, residual carbohydrates and feed additives

imunopro™

NUTRY-LYST™

BUTYRATE



Energy 17.6 Mj ME at feed rate of 900g/d

FLOURISH CALF

Flourish Calf™ 50% skim 100% Feed For Growth

DESIGNED TO DRIVE 900G GROWTH PER DAY*

Formulating with 50% of the ingredients from skim milk powder means the level of casein in the product is maximised which promotes good clot formation in the abomasum, resulting in better digestibility.

- 100% Dairy Protein
- 50% Skim milk powder inclusion to promote good clot formation and digestibility
- 23% Protein to lay down the building blocks for excellent growth and development
- 19% Oil to provide enough energy to the calf whilst encouraging starter intake to promote good rumen development
- Enhanced with Progres® to support good gut health and contribute to better animal performance.

PROGRES® inside 100% NATURAL

GARDION™ BUTYRATE

In a recent (2024) trial of Flourish Calf, Calves fed a total of 57kg Flourish Calf milk replacer over 63 days doubled their birth weight (38kg) by weaning, weighing on average 91kg at 66 days of age. Calves also had excellent growth rates up to weaning of 0.84kg per day and continued to thrive post weaning with growth rates of 0.97kg per day. *For more information on this trial please visit the trial work section.*

*Based on recommended feeding rates with access to ad lib starter feed and water

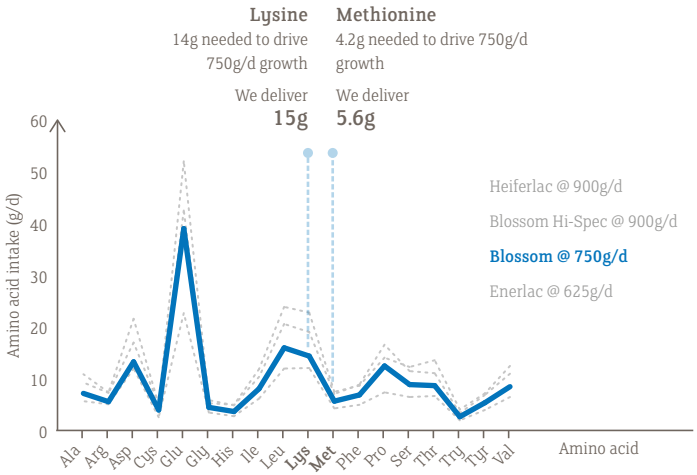
**'Other' includes moisture, vitamins, residual carbohydrates and feed additives

BLOSSOM® EASYMIX

The tried and trusted performer

DESIGNED TO DRIVE 750G GROWTH PER DAY*

- Tried and trusted performance
- Great results every time
- High imunopro™ content
- Gardion health package
- Higher levels of leucine

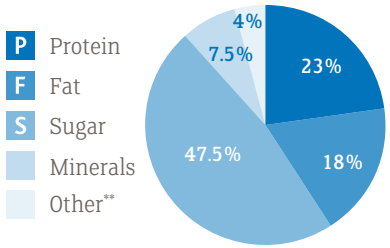


*Based on recommended feeding rates with access to ad lib starter feed and water

**'Other' includes moisture, vitamins, residual carbohydrates and feed additives

imunopro™

GARDION™ BUTYRATE

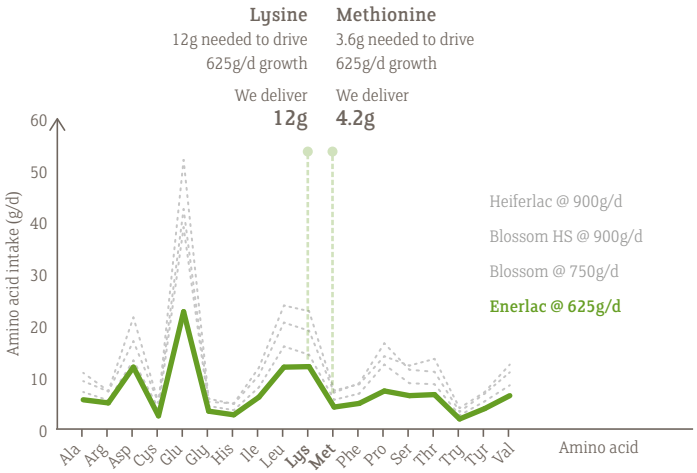


Energy 14.85 Mj ME at feed rate of 750g/d

ENERLAC™ The cost effective solution

DESIGNED TO DRIVE 625G GROWTH PER DAY*

- A carefully selected blend of imunopro™
- Specially designed for beef or mixed enterprises
- For non-replacement animals
- Gardion health package
- Elevated leucine

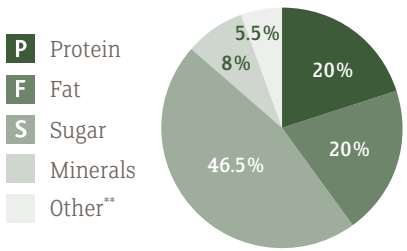


*Based on recommended feeding rates with access to ad lib starter feed and water

**'Other' includes moisture, vitamins, residual carbohydrates and feed additives

imunopro™

GARDION™



Energy
12.1 Mj ME
at feed rate
of 625g/d

23 Palm Products Sustainability Policy

We are committed to helping dairy farmers improve productivity and the longterm health and welfare of their animals in a responsible and sustainable way. We aim to be the agents for change advocating responsibly sourced palm oil and palm oil derivatives. Our ambition is to lead the discussion on the importance of looking after the future dairy herd and the use of sustainable palm oil.

Benefits of palm products

Volac Milk Replacers uses Palm olein (a derivative of palm oil) in its milk replacer formulations because its fatty acid profile is perfectly suited to youngstock nutrition as well as its efficiency and cost effectiveness as a crop. Palm is the most efficient oil-producing crop available today, producing more metric tons of oil per hectare than any other vegetable crop. This is important as the ever-growing global population strives to produce enough food. Palm is a particularly attractive commercial crop for smallholders, because they can grow it on a range of soils, requires relatively little fertilizers and pesticides, and bears fruit all year-round. Currently, oil palms are grown on approximately 7.4% of land devoted to vegetable oil crops, yet palm oil makes up 39.6% of all vegetable oil production. (EPOA) [1]

Global context

It is predicted that the global population will rise to more than nine billion by 2050, which in turn is expected to result in significant increase in the demand for palm oil and its derivatives. Volac recognises that whilst plantation development has contributed significantly to economic development in countries where palm oil is produced, and while a great deal of improvement has been achieved, in some cases the production of palm oil can still be linked to sustainability challenges like deforestation and exploitation of people and local communities. If palm oil and its derivatives are to play a leading role in the future of farming, then Volac is convinced that it must be produced in a sustainable and responsible way.

Policy aims

Our sustainability policy for Milk Replacers guides us in our strategic and daily operations and also our future activities. It helps shape our broader sustainability agenda and serves as a promise to our customers, consumers and other stakeholders. It will educate and inform people about our use of palm-based materials and it is our vision and strategy to become a leader in sustainable dairy nutrition.

This policy applies to all Palm oil and its derivatives within our Volac Milk Replacers Branded and Joint Branded Milk Replacers that we purchase as Palm olein or any other palm oil derivatives.

Our commitments

1. **To only use palm oil derivatives in our milk replacer products from sources that fulfil NDPE sustainability criteria or RSPO Certified Sustainable Palm Oil.**

Volac only sources palm oil and it's derivatives for milk replacers from suppliers that share our commitment to the sustainability criteria of 'No Deforestation, No Peat and No Exploitation' (NDPE) with respect to plantation development and the palm oil supply chain.

The NDPE criteria are: -

- No Deforestation
- No Development on Peat
- No Exploitation of People and Local Communities

2. **Transparency and traceability for all the palm oil derivatives and final products within our supply chain.**

We define 'traceability' as the ability to trace palm oil throughout the supply chain back to mills. Our Palm Olein is > 99% and traceable back to mill.

3. **To actively promote the benefits of sustainable palm oil within the animal feed industry**

Volac only use products which have been supplier assured to align to NDPE criteria or that are RSPO Certified.

Volac has strong business and sustainability ambitions, however we acknowledge that in relation to the global palm oil production, the impact we can have as individual businesses is relatively modest. Therefore, we will do all we can to influence our industry and will collaborate with partners (customers, suppliers, processors, retailers, governments, NGOs and broader stakeholders) to further develop the sustainability, traceability and responsible sourcing of palm products, including those certified by the Roundtable on Sustainable Palm Oil (RSPO).

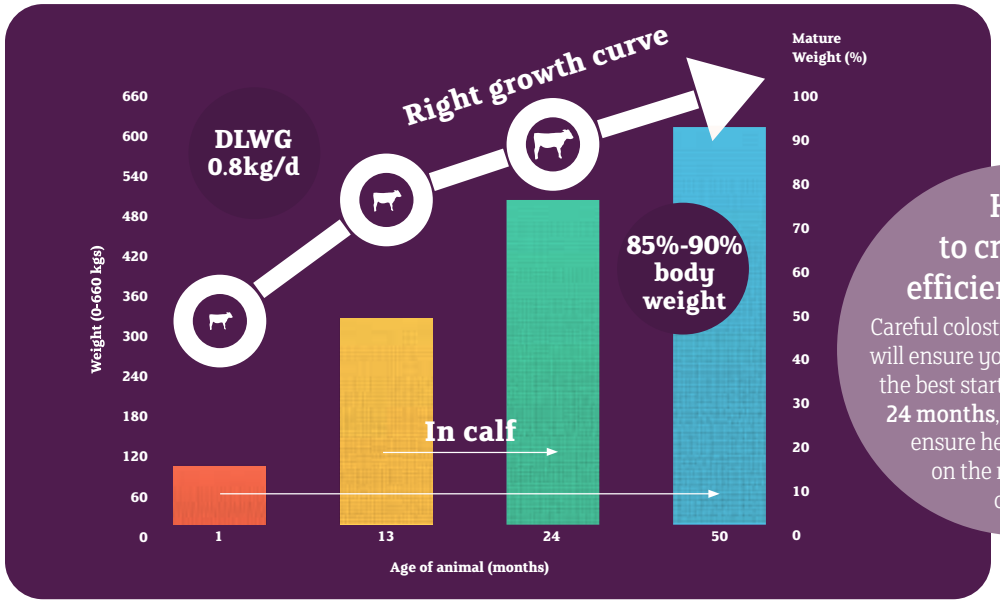
For our full Palm Oil Policy please see www.feedforgrowth.com

FEED FOR FUTURE

[1] https://palmoilalliance.eu/wp-content/uploads/2019/10/Brochure-Palm-Oil-Story-2019-FINAL.pdf

24 Feeding for Efficiency

The average age of first calving in the **UK is 27 months (NMR, Aug 2020)** but calving heifers at **24 months of age** is proven to be more beneficial to their lifetime performance. Dairy heifers that fail to grow adequately from **Day 1** won't meet this important target.



How to create an efficient system

Careful colostrum management will ensure your calves get off to the best start. To hit calving at **24 months**, start at **Day 1** to ensure heifer calves are on the right growth curve.

The benefits of feeding more milk replacer

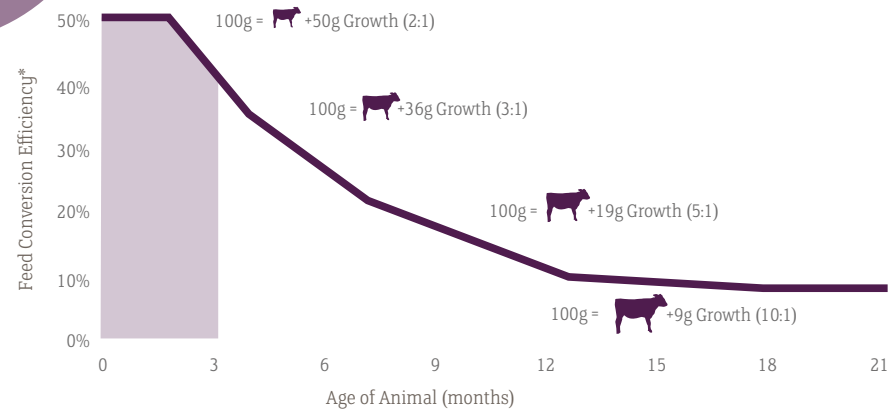
The primary source of nutrition for a calf during the first 3-4 weeks is milk and feeding more milk replacer from a few days of age will help:

- Maximise feed efficiency
- Prevent early weight loss
- Maximise early growth potential
- Improve health
- Improve future performance

Maximising feed efficiency

Feed efficiency (def: the relative ability of the animal to turn feed nutrients into growth) is at its highest during the milk feeding period.

For the same amount of feed intake, as the animal ages, you get less growth back out, so take advantage of the high feed efficiency in the first two months of life to maximise growth.



*BW gain/amount of feed consumed Bach & Ahedo 2008 Vet Clinics Food Animal Prac 24 117-38

The growth triangle

To get heifer calves off to the best possible start and hit the DLWG target of 0.8kg/day, create a positive 'growth triangle' around 3 key elements:

- Environment
- Nutrition
- Health

Not all Milk Replacer is the same

The type and quality of ingredients in a milk replacer will also help determine calf performance Calves fed milk replacer with a high inclusion level of Imunopro™ grew faster compared to those fed milk replacer with a low-level inclusion of Imunopro™.

	Body Weight kg	
	Low Imunopro™	High Imunopro™
Birth	39.7	38.5
Day 14	46.6	47.1
Day 28	54.0	53.9
Day 42	61.9	64.1
Day 56 (weaning)	74.1	77.7
Day 70	91.8	94.9

Volac Calf Trial 2019/20 – AFBI, Hillsborough, NI

The benefits of high-quality milk replacer

Feeding a precise level of high-quality, precision formulation milk replacer that has been balanced with the optimum level of vitamins and trace minerals will ensure your calves will reach their full potential and meet your targets.

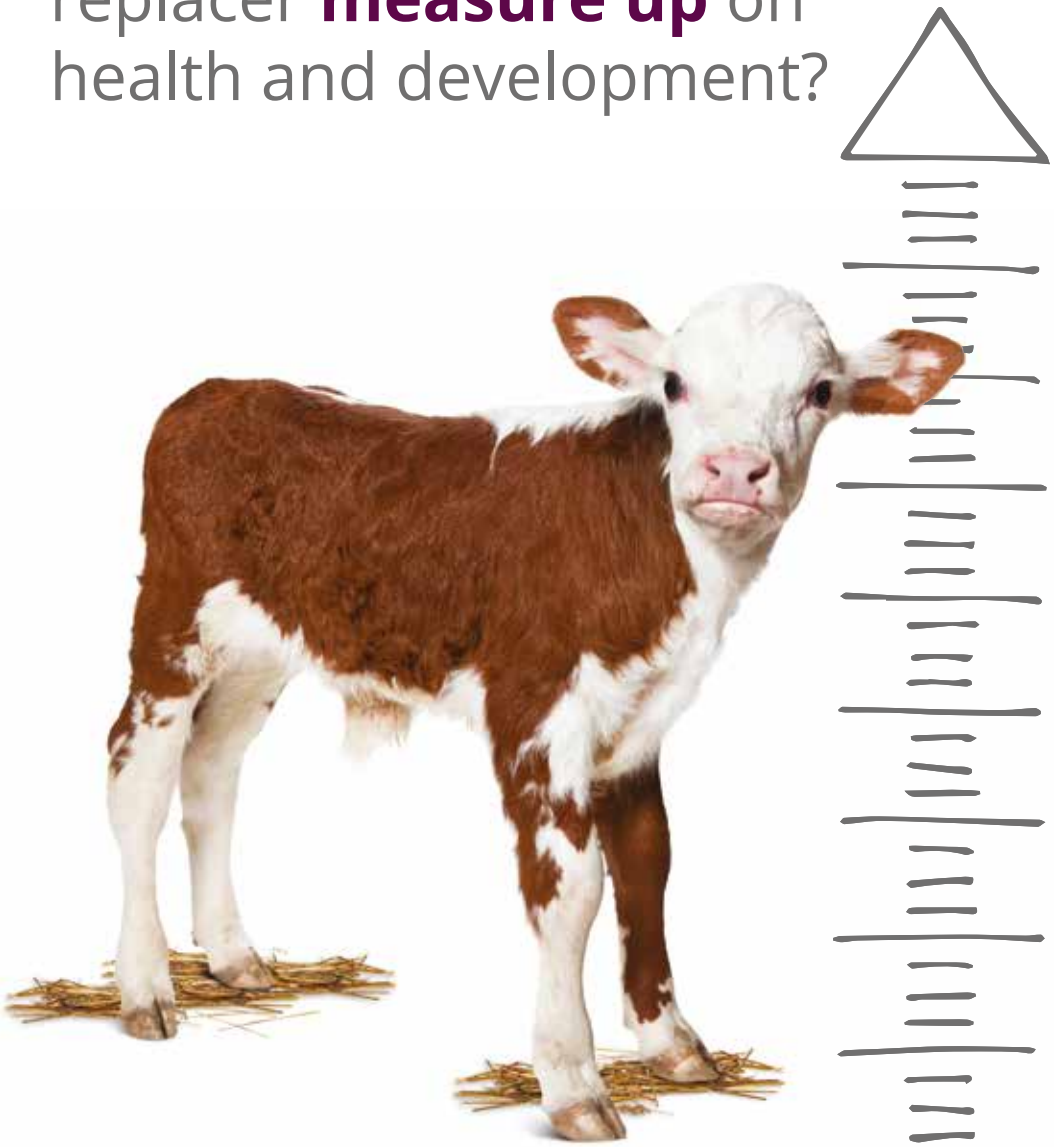
Benefit to calf	Benefit to farmer
Maximising growth and development during the milk drinking phase will help with overall development and assist in a strong immune system ensuring your calves remain healthy and will meet their full potential.	Stronger immune systems mean a healthier herd, resulting in less illness, better growth rates and fewer losses.
The whey fraction of colostrum contains the bioactive content for calf success, we take liquid whey and concentrate it up to make our unique Imunopro® which is present in all our milk replacers.	To achieve a minimum growth rate of 0.7kg/day pre-weaning, a minimum of 750g-900g of milk solids per calf per day should be fed in at least two feeds.. Increasing the pre-wean average daily growth is proven to have a positive impact on age at first calving and the first lactation milk yield.
High-quality milk replacer leads to healthier, bigger and better developed calves, keeping them healthy and strong.	Feeding high quality milk replacer ensures your calves get off to the best start for an efficient and sustainable system.

FEED FOR FUTURE

The 3 Pillars of Feed for Future

Feed for Future is an initiative set up by Volac in which we want to encourage the industry to do better for the future. Beginning with looking after the future of our planet by using sustainable raw ingredients, the future of our industry by helping give back where we can and the future of your herd and your business by encouraging efficient and sustainable practices on farm to increase the longevity of your herd and increase the profitability of your business.

How does your milk replacer **measure up** on health and development?



Feed Rate/Feed Curve/ Things to remember

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YOUR PARTNER FOR PERFORMANCE

FEED FOR GROWTH™