

# ENERGISE CALF GROWTH BY FEEDING THE RIGHT TYPES OF FAT

Despite a fixation on protein levels in milk replacers, calves also need the right energy for maintenance and growth especially in cold weather.

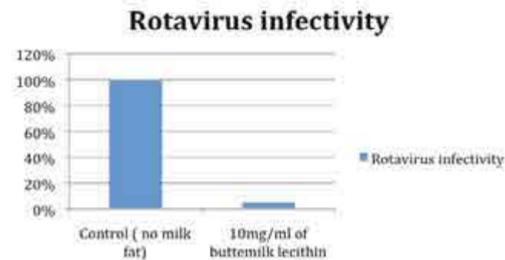
Milk replacer-fed calves are reared on plant fats instead of butterfat so it is important that the fats used are easily digested and don't discourage dry feed intake.

There has been much discussion on high protein levels, despite researchers in Europe failing to replicate the original American work with these diets. This discrepancy may be explained by the fact that the US products incorporated milk protein ingredients used only in sport and the body-building sector.

Even if these ingredients were available for use in calf milk, the milk replacer would cost over 40p/ litre to feed. Using even a small amount of plant protein lowers this cost but substantially lowers the performance of these products (see table 1).

It has also been claimed that high protein milk replacer increases animal immune response but a number of trials in the US found that

Figure 1: Effect of buttermilk fat on Rotavirus



(Fuller et al 2013)

calves on high protein diets were more prone to scour; there were also higher mortality levels when exposed to disease.

So it is a paradoxical situation when it comes to high protein; we have neither the tools nor the economics to do it properly.

The alternative is to use good quality milk ingredients that provide protein, lactose and butter lecithin to increase growth rates and encourage dry feed intakes.

Table 1: Effect of plant protein on calf growth

Milk replacer	20% Protein (100% milk protein) 20% fat (A)	26% protein (100% milk protein) 17% fat (B)	26% protein (70% milk protein) 17% fat (C)
ADG kg/day	0.555	0.64	0.49
Hip width increase cm	2.83	.6	3.0
Milk replacer intake kg/day	0.454	0.681	0.681
Abnormal fecal score days <sup>4</sup>		10.8	11.1

Hill et al 2007 (treatment A was not a side by side treatment to B&C but is a valid comparison)

Once 18% fat is exceeded at high feeding levels, dry feed consumption is delayed. This extends the milk feeding period and delays rumen development. This is especially true when using only one or two sources of plant fats.

# ENERGISE CALF GROWTH BY FEEDING THE RIGHT TYPES OF FAT

The correct fat can also have significant health benefits. According to Tom Warren of Bonanza Calf Nutrition, they use buttermilk containing the outer skin of the milk fat globule throughout the Shine range. This skin is removed in the churning process and is included at twice the level found in cow's milk. The skin or lecithin helps with the digestion of fat and has been shown to inhibit Rotavirus activity. (See figure 1)

When designing a fat blend, the Omega 6 to 3 levels are important to consider. Normal calf milk has a ratio of 100:1. The Shine blend is 2.8:1. This latter formula has been shown to possibly help calves with pneumonia by reducing rectal temperatures and inflammation. (See figure 2)

Good instant properties are also important as overmixing of semi-instant products breaks down the fat emulsification, leading to poorer digestion and greasy feeding utensils.

By feeding 600g of a high milk protein, highly digestible multi fat blend, calves will perform at an early age and weaning can be carried out earlier, allowing more time for calf management.

Feeding this type of diet in one milk feed while calves have adlib access to dry feed and water offers even more time to this vital task. It's also more sustainable because it requires less energy and water. In recent French trials, once a day milk feeding with Shine Once-a-Day increased rumen development by 58% (see table 2). It is essential to ensure calf milk is a skim-based calf milk if feeding milk once a day.



Effect on a fat blend on reaction to Pasteurella vaccination

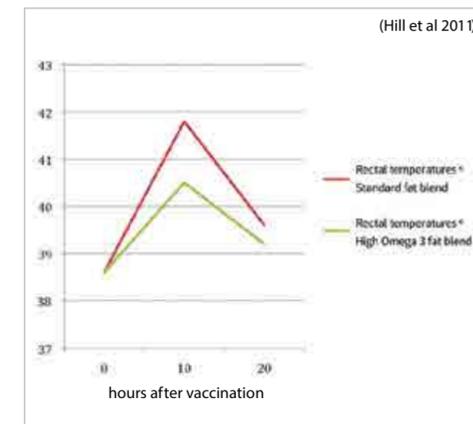


Table 2: Effect of milk feeding frequency on rumen development

Rumen papillae	OAD milk +adlib dry feed	TAD milk+ adlib dry feed
Density of papillae(n/cm <sup>2</sup> )	84.8	64.7
Absorbing surface (cm <sup>2</sup> /mm <sup>2</sup> )	98.1	62.4

(INRA 2013)

UK: 0808 1781017 IRL: 087 2588 394  
 Bonanza Calf Nutrition, Coes rd ind Estate, Dundalk, Co Louth.  
 Tel: 00 353 (0)42 9336001. Fax: 00 353 (0)42 9336002.  
 Sonya Hassett: shassett@bonanzacalf.ie  
 www.bonanzacalf.ie



## THE SHINE RANGE

### ANOTHER INNOVATION FROM BONANZA CALF NUTRITION



# COLOSTRUM

A lack of colostrum has been shown to effect health, growth rates, milk yield and fertility.

- Heifer colostrum is poor compared to mature cow colostrum
- Holstein colostrum has only 50% of the antibody protection of beef cow colostrum (Table 1)
- As milk yields increase colostrum quality tends to decline.
- Calves that receive insufficient colostrum have to use energy and protein from their feed to fight disease instead of using it for growth and development.
- Feeding high levels of Iodine to dry cows significantly reduces the calf's ability to absorb colostrum antibodies.



Mature (5-year-old) crossbreed cows produce the best colostrum for freezing. Use a pre-calving mineral to improve colostrum quality.

### Milk or Milk Replacer?

Milk replacer prevents the spread of certain viral diseases as well as Johnes disease in a herd. Many of these diseases effect the long term health and fertility of the cows in a herd and feeding pooled non pasteurised milk is a primary cause of the spread of these diseases.

### Recommendation

Always use milk replacer to rear heifers and only use waste milk for bull calves (non-breeding) if over quota.

### Recommendations

The calf's ability to absorb colostrum starts to decline two hours after birth. Within 6 hours it has declined by 50%. The cow's colostrum quality also declined by 4% every hour after calving. All calves need to drink, or preferably suckle, up to 4L of colostrum in the first two hours of life. Ensure cows udders are clean to minimise infection and help calves to find a teat. If a herd is closed and free from viral or Johnes infection frozen colostrum can be used for feeding to heifer calves.

**Table 1 1st milking colostrum Ig (mg/ml) concentration**

Cow breed	IgG1 (mg/ml)
Charolais	159
Limousin X Friesian	170
Simmental X Friesian (X Friesian)	168
Holstein X Friesian	83

# TRANSFORMULA BABY MILK FOR BABY CALVES



The benefits of colostrum are a given and feeding 4L of good colostrum in the first 2 hours of a calf's life is key, but increasingly there is a realisation that this is not the full story.

The surface of the small intestine (SI) is like an external skin and has to withstand the physical and chemical abrasion of food, digestion and the continuous attack of pathogenic organisms. The cells of the small intestine are replaced by new cells within a few days of birth and the surface antibody from colostrum, at this stage, is rapidly depleting leaving these new cells vulnerable to attack. Transition milk contains surface antibody that can replace the colostrum antibody and this will remain in the SI to help maintain calf intestinal health. In order to protect calves against rotavirus farmers are vaccinating cows to increase the level of antibody in colostrum but this will only be partially effective unless colostrum or transition milk is continued to be fed for at least 7-14 days. Because of Johnes disease and practical issues on many farms, calves only get 1 or 2 feeds of colostrum, at most, before going on to milk replacer.

### What's in Transformula?

Transformula contains;

- Egg protein
- Beneficial bacteria
- Krypto-nite – a plant extract
- Yeast cell wall material
- Buttermilk lecithin

We include these ingredients at up to ten times

those found in milk replacer or cow's milk. This is because they are of most benefit to the baby calf and best fed in a baby calf milk formula. Feeding adequate high quality colostrum and Transformula sets calves up for the rest of the rearing period reducing the labour and expense involved in rearing calves undernourished in the first week of life.

### What is Transformula?

Transformula is designed for use after colostrum feeding. Made with over 60% skim milk and buttermilk along with 5 plant oils and whey protein it is easily digested by the baby calf. Dried under low temperatures it ensures the baby calf is not exposed to high bacterial counts found in stored raw cow's milk. These bacteria remove antibody from the milk and can have pathogenic effects as well. It also contains ultra high levels of plants extracts, probiotics, prebiotic and egg protein. These can be found in other calf milks but only at low levels. The levels included in Transformula are comparable to the calf tubes and pastes available in the market.

### Feeding Transformula

Feeding Transformula will cost £14-15/calf or a net cost of £5 over standard milk replacers. It will set baby calves up for the next 6-7 weeks of milk feeding and produce stronger healthier weaned calves.



# SHINE: THE RANGE MADE WITH REAL MILK

Shine is made with a wide range of milk ingredients including butter and skim milk powder. We also use whey protein, concentrated milk lactoserum and whey. All ingredients are co dried to ensure easy mixing, maximum protein digestibility and uniformity.

Shine is the number 1 easy mixing product in Europe and has received awards for its dedication to quality.



### Shine Once-a-Day

This award winning milk powder is the pioneer of once a day feeding and is made with butter and skim milk powder. It can be fed with water or milk to reduce your workload but not compromise the calf.



### Shine Twice-a-Day

Your flexible friend suited to twice a day feeding or through machines. Containing the ingredients listed above no other powder can match the benefits of feeding Shine. Designed for maximising growth with high index calves. Calves can be pushed to ensure high performance from day 1.



### Sweet Complete

Made with buttermilk for that extra security and performance to ensure maximum intakes of dry feed, high weaning weights and minimum problems- ideally suited to twice a day feeding or through machines.



### Compumate

The only milk replacer designed for computerised machine fed calves. To reduce the stress on calves being in large groups of differing ages Compumate contains anti bacterial agents and immunostimalants to minimise health problems. It is made with whey protein and skim milk as well as 4 vegetable oils and natural sweeteners to maximise performance.