Lakeland-Scottish Feeds & Services
Newsletter

Efficiency, Health & Sustainability

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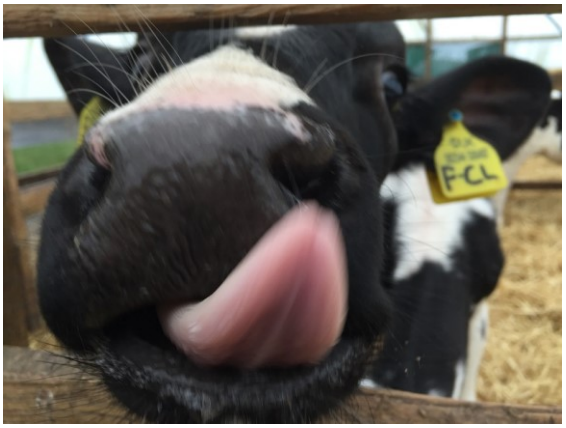


Introduction

These introductions are always a bit of a challenge. I am always torn between sticking to the agenda (The items in the rest of the newsletter.) and or making some sort of comment about how I, and some of the trade contacts see the future. I Thought quite hard about this and realised that I would sound like the proverbial “grumpy old man”! I also realised that most under 50’s have never lived through high interest rates and some banks are staffed by a generation of employees who haven’t experienced it either. Mmmm… a bit grumpy!

The items in this newsletter are straight forward and worth a glance at least.

As for comment, I and most of my trade contacts don’t reckon that even the best advisors can see thought the current fog and predict anything too far ahead. There is a universal desire for a bit less volatility in the markets but there doesn’t seem much chance of that although it does seem like forward commodity prices are dropping quite fast.

But then with farm gate prices also dropping, cost also have to come down. However, having said that, it is important the new low point reflects the general increase in costs caused by inflation.

Calf milk replacers and protected fats and urea have all dropped substantially since January 1st , so, if it’s appropriate, they may offer a chance of some cost-effective extra production. I don’t think that commodity spot prices will really change much until May.

I have been looking at the agenda for this year’s ruminant meeting of the Society of Food Technologists.

We are increasingly being rewarded according to our abilities to reduce our environmental impacts. The agenda looks interesting and nothing like the agendas we saw pre-COVID and The Ukraine war!

The GFLI database and labelling for nutrients, The effect of heat stress on milking cows in Britain 2022, A balanced view on methane inhibitors, and Outcomes from the CIEL Feed to Beef project.

The Global Feed LCA Institute (**GFLI**) is an independent animal nutrition and food industry institute with the purpose of developing a publicly available feed Ingredients Life Cycle Analysis **(LCA)** database.

CIEL: Centre for Innovation Excellence in Livestock

All of this is targeted on environmental sustainability and better efficiency.

But…… **There has to be a payback financially!**

Kemin, (one of our suppliers) introduces one of their brochures on ruminant nutrition with the following words.

"Efficiency, Health & Sustainability are the three key pillars to any animal production system."

"These three areas need equal attention to optimize the profitability of farming. This balanced approach is necessary to achieve a healthy business that can thrive in a world of climate change, increased production costs and a massive market volatility.

It all comes down to efficiency, and modern business will have to pay attention to detail when it comes to sustainability."

The development of our data collection systems and the computer driven analytics available to help our day-to-day management is being increasingly adopted as a way of improving our efficiency.

This is undeniably a progressive step to take but, we must **always remember that we need to be good stock men and women** because visual inspection will always pick out issues that the data sensors do not!

So how much fine detail will we need? There are some real dilemmas emerging. The idea that we should allow dairy cows the freedom to graze in order to satisfy consumer expectation, may not fit particularly well in many systems. The variability that this can pose (rumen fermentation stability, weather, water supply, non-grazing times etc) can result in reduced efficiency and increased carbon footprint per litre of milk production.

The consumer does not understand this, and the supermarkets and the dairies need to understand this better than they appear to do. It makes me wonder if their own advisers have taken time to get their boots dirty or, if they are living in some sort of textbook utopia that has been scripted by fiction writers rather than the real-world experience of farmers and producers! Whoops.. grumpy again.

Okay, enough of the comment and down to the substance.

Pea & Bean Meal

Product Description.

Free flowing palatable dusty coarse meal.
By-product of dried legume processing mainly for human consumption. The meal consists of hulls and ground screenings mixed with some whole ground product.

Product Analysis

Results expressed on Dry Matter Basis	
Dry Matter	**88 to 90**
Oil A	**1.8**
Oil B	**3.3**
ME (MJ /Kg DM)	**13.6 to 13.8**
Protein	**17 to 19**
Fibre	**16**
Ash	**4**
Starch	**27 to 30**
Sugar	**4**
NCGD (Fibre Digestibility)	**83 to 94**
NDF	**30 to 33**

Product Use

Pea & bean meal is a by-product derived from three processors. The product is a mixture of polishings, screenings, hulls and ground whole picks.
The meal is a source of good quality protein and high energy from slow fermenting starches and highly digestible fibre. This has a positive effect on butterfat synthesis in lactating ruminants.
The protein is a good source of Lysine but has moderate levels of Methionine and Cystine.
The meal is also a good source of Thiamine and phosphorous.
Dairy cows can benefit from up to 3Kg inclusion. Young stock can be fed 2Kg.
The straight is a well-balanced feed in its own right and can be used as the sole concentrate for growing heifer replacements when fed with a suitable mineral supplement on low protein forages.

Offer

Production of Pea & Bean meal is seasonal, starting **after** harvest in early October and slowing down in the following summer. This is currently in good supply and great value for money. If this of interest call me for a quote on 07711034141

Artificial Colostrum.

The first question that we have to ask is do we need it? And the second question is how it works.

I published some of this text back in June 2020 but since then we have adopted the **ALTA Calf's Choice Total 100** dried bovine colostrum supplement which can be used to top up weak colostrum to a sensible target Brix density of say 25, or in extreme cases to substitute it completely though this is a very expensive option.

Ideally mothers own colostrum at or above a 25 Brix refractometer density is always first choice.

At birth it is essential that the calf has a good feed of colostrum, (first milk) within 6 hours.
Colostrum is rich in the essential nutrients and antibodies needed to protect the young calf from the environmental disease loading on the farm into which she is born.
The calf's mother will have developed a good level of immunity to these local disease challenges and will pass the immunity on to its calf via this mechanism.

Currently the recommendation is to feed 4 to 6 litres of colostrum in the first 6 hours after birth. At least 3 litres in the first 2 hours!

Colostrum quality is important. Its specific gravity should be measured using a colostrometer. (This tells us how rich the colostrum is). The target density should be 75mg per ml of Ig

Concentration of IgG (the main immunoglobulin) in colostrum varies according to many factors, including a cow's disease history, volume of colostrum produced, season of the year, and breed. Research has shown that IgG levels vary widely from one cow to the next and range from less than 20 to over 100 mg/ml. The difference between 20 and 100 mg/mL of IgG in colostrum can mean the difference between failure and success in passive transfer of immunity.

Colostrum containing 75 mg/ml or more of IgG is considered to be a high-quality feed for new born calves. Measurement of IgG concentrations in colostrum can be very useful in managing colostrum quality and monitoring colostrum feeding practices.

Although high quality colostrum is typically very thick and creamy, appearance alone does not reliably predict IgG content.

Volume of first milking colostrum also can be misleading and is not a recommended method for estimating colostrum IgG content. In addition, although IgG concentration can be measured very accurately in a laboratory, these tests are time consuming and not typically available to farmers.

Hydrometers and refractometers can be used on the farm to estimate colostrum IgG, separate good quality colostrum from poor quality colostrum, and improve your ability to provide calves with enough IgG to attain successful passive transfer of immunity.

We recommend the use of a **"Brix"** Refractometer to measure colostrum quality.
A good target density is say, 25 with some farmers aiming as high as 27! The Brix Refractometers cost around £20 and are now readily available from good veterinary suppliers or over the internet.

The use of a simple App simply called Colostrum Calculator

Its simple to use and tells you how much colostrum supplement to add according to the amount and Brix density of the colostrum available. Then you just simply mix it in at the right temperature 38°to 42°C

Colostrometer floats (hydrometers) can also be used to get a rough estimate of the quality in seconds.

Colostrum containing > 75 mg/mL of IgG can be fed to new-born calves or stored for future use. Avoid feeding any other colostrum during the first or second feeding; lower quality colostrum can be mixed with transition milk and fed to calves that are at least two days of age.
Some of the older research sets target density at > 50mg/ml but the recent more ambitious target of > 75mg/ml will naturally give a much better response and is a better target for modern managers.

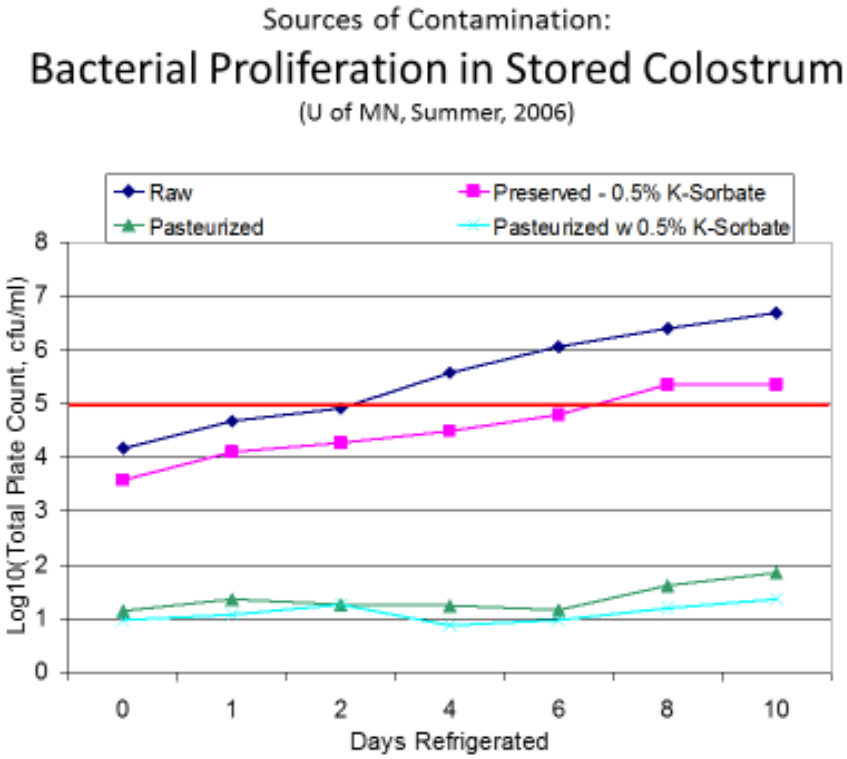
It is important to feed colostrum fresh because it can proliferate bacteria very rapidly.
Professor Sandra Godden from the University of Minnesota published data showing that even refrigerated colostrum that is pasteurised has a better "shelf life" and can be further extended by using Potassium Sorbate as a preservative.

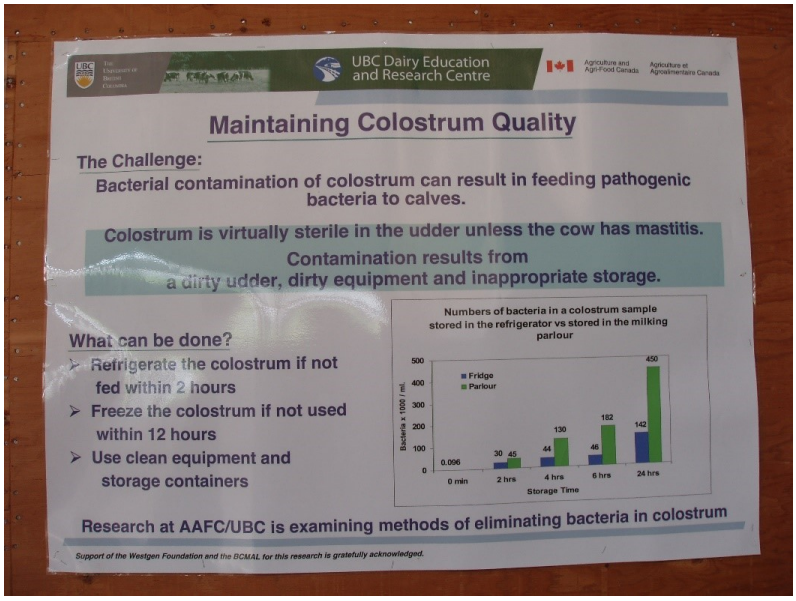
Heat-treated colostrum at 60˚C (140˚F) for 60 minutes was considerably more effective at keeping bacteria counts in fresh colostrum low for an extended period.

Heat-treated colostrum, with or without potassium sorbate, had sufficiently low levels of bacteria to be fed safely after even 10 days of refrigeration.

The bacterial proliferation increases rapidly if not treated and dirty colostrum will significantly reduce the passive transfer of IgG.

The graph below is a logarithmic scale because if we used actual numbers the curve would almost be a vertical line!
See graph below:





Note:- The graph shows bacterial proliferation in hours, not days!

Freezing colostrum should be done immediately after testing and as soon as possible after drawing off. This will be the most effective way of managing colostrum for calves at the lowest possible bacteria count.

After Thawing and bringing up to 40°C it should be fed straight away from a sterilised bottle & teat. At birth, the calf is able to absorb the antibodies contained in the colostrum via the gut wall. This mechanism becomes switched off after a few hours.

Hence it is essential for the calf to suckle as soon as possible after birth in order to gain as much immunity protection against the environmental disease challenge that it is exposed to as soon as it is born.

Bought in calves are at much greater risk of infection than those that remain on the farms where they were born. When they arrive on a new farm, they come into contact with a whole range of “foreign” diseases. So, unless they received colostrum and are injected with a booster, they may well succumb to the new diseases.

It was a worry that farms that were meticulously disinfected after the 2001 Foot and Mouth epidemic had virtually eliminated background disease.
As a result, the animals used for re-stocking were not exposed to the usual disease challenge and calves subsequently born on these farms did not receive a particular antibody rich colostrum.

This made them much more susceptible to infection from the natural disease build up occurring on these farms. It was worth taking steps to protect these calves with extra antibodies from artificial colostrum or injections.

There is already evidence that relocated calves are very susceptible to the effects of changes to their environment.
This shows up as behavioural changes in adult cows to reduced performance in calves and young stock. It is essential to ensure a minimal stress and that the mineral and vitamin intake of these animals is adequate to promote good levels of immune response.

Colostrum has a very high level of protein, fat, and lactose. It is a fantastic nutrient source so it is readily converted to tissue by the calf.
This has been shown to create an opportunity to get calves off to a more robust start in life because adding a little colostrum powder to the milk for the first 3 days of life can boost not only the calf’s defences (although the response is pretty limited after the first six hours); but also the nutrition.

Alta have released a protocol (see below) which has been shown to be very successful in this respect with less incidence of nutrition disorders and a reduction in incidence of disease challenges.

CREATE MORE PRODUCTIVE CALVES

with a Post Day 1 colostrum program

Supplement whole milk or milk replacer with colostrum powder to mimic transition milk and provide calves with the bioactive factors of colostrum. that support gut development.

POST DAY 1 FEEDING RECOMMENDATIONS			
Feeding Purpose	Grams of Colostrum Powder to Add Daily		
	1 feeding	2 feedings	3 feedings
ADEQUATE SUPPLEMENT	70g	35g	23g
GOOD SUPPLEMENT	105g	53g	35g
EXCELLENT SUPPLEMENT	140g	70g	47g

1. Calculate grams of colostrum powder to add to whole milk or milk replacer.
2. Add the colostrum powder to the milk replacer or whole milk and mix to create transition milk.
3. Feed transition milk for at least 5 days and up to 14 days for maximum benefits.

Due to all of the risks associated with collecting, storing, handling, thawing, or pasteurizing maternal colostrum, it becomes much easier to mimic transition milk with colostrum replacer powder than with maternal colostrum.

If feeding whole milk, add the powder directly to the milk. If feeding a balancer or milk replacer, you must first subtract the milk powder that you are substituting with colostrum powder. Mix at 43-49°C for maximum mixability.

Balancing Dry Cow Diets.

Most references available to students and farmers alike will state that close up dry cows (from 3 weeks before calving to calving; require calcium at 30 grams per day. If the veterinary profession is advising to target cows at a 30-gram inclusion, is there *any* benefit to feeding higher levels of calcium to the close-up dry cow?

The short answer is yes. When a cow is fed a low calcium diet, she is reliant on being able to mobilise the initial requirements for muscle function for the act of calving and expelling the placenta, from her body reserves alone. This can be very effective if she has good reserves. Older cows tend to have lighter skeletons and less calcium to release into the blood so they are much more susceptible to milk fever and its host of associated symptoms.
When higher levels of calcium are fed and properly balanced either by blocking or by DCAD, there is a much better availability at calving, this means less risk of milk fever and less mobilisation from body reserves with ultimately better longevity and usually more milk.

The 30-gram target is not easy to achieve, normal intakes of grass at @ 7 grams per kilo of dry matter and typical grass silage @ 5 grams per kilo of dry matter would supply 50 to 90 grams. This is a problem!

There are four options available to manage the effects of calcium content in this period.

1. Create a really low calcium diet by feeding low calcium forages like straw, whole crop or maize silage. This option will also supply calcium and may still need to be supplemented by blockers to avoid the effects of any calcium that creeps over the 30-gram target.

2. Feed calcium blockers like X-Zelit follow the link on our website. (lakescot.co.uk)

3. Feed a DCAD diet. This option will allow the risk of milk fever by the extra calcium in the diet to be negated by managing the Cation : Anion balance into a negative charge. Follow the link on our website.

4. Include **NutriCAB**™ a **Kemin** palatable calcium chloride product with a DCAD value of minus 13800 mEq/kg. Supplies vital calcium in a dormant form which effectively activates at calving and convincingly reduces the milk fever risk. It is a safe sweet, palatable, coated non=hygroscopic capsule which is easy to use and easy to store.

The ratios that we use and targets are all useful to know:

Calcium can be included up to 140 grams when calcium blockers are used.

Magnesium target is about 0.4 % of dietary dry matter supply per day. 35 to 55 grams.

Phosphorous target is about 0.4 % of dietary dry matter supply per day. 35 to 55 grams.

When DCAD is used, the negative charge is related to the target calcium content of the diet. I have been advised that each cow seems to have a unique response to calcium mobilisation.
The DCAD target should target about minus 80. The target range is between minus 60 and minus 80 but can go up to minus 100.

The calcium range is much tighter and is generally recommended at 120 grams in a DCAD or X-Zelit supplemented diet.

Note the tolerances are quite narrow so we recommend that if you cannot be sure of accuracy the system can fail. Common issues are low intakes of the close-up dry cow TMR. Variable intakes of the anionic salts which are not very palatable, and inaccurate estimation of the potassium levels in the forages.

Monitoring Urine Ph is advisable even as a routine check. The target Ph is to target a high figure of around 7.5.
The table below is a standard reference and shows that a falling Ph at this stage of pregnancy starts to create serious issues with metabolic acidosis and kidney overload.

Table 1. Relationship of dietary DCAD, urine pH, and metabolic status of dairy cows.

Close-up ration DCAD	Urine pH of close-up dry cows	Acid-base status of close-up dry cows	Calcium status of fresh cows
Positive	8.0 to 7.0	Alkalosis	Low blood calcium
Negative	6.5 to 5.5	Mild metabolic acidosis	Normal blood calcium
Negative	Below 5.5	Kidney overload crisis	

Source: Davidson et al., 1995. Hoard's Dairyman 140:16:634.

Ketosis prevention

As most of you know I am a strong advocate of ReaShure choline and LF Transition for liver conditioning.

Another approach which can run as an alternative or as well as the Choline approach is to stimulate the liver function with fast active non-rumen available sugar analogues like Glycerol and Propylene Glycol.

As prices have dropped, we have re-introduced **F 1 Elevator** (a spiced (MPG) mono propylene glycol / glycerine mix). We still think that this is a “no corners cut” very high quality product.
We also realise that whilst the evidence-based returns are great for this product, the current price can put some farmers off.
As a result, we now also offer two other liver active sugar analogue products to stimulate appetite and liver function of close-up dry cows.

1. Glycopass, a dry glucose analogue meal.
2. A new glycerol based liquid feed called “Reset L” which is a low-cost version of F1 Elevator because it doesn’t contain as much MPG.

Raw Material Markets

I guess the big news is that the wheat price has collapsed from the late autumn highs to currently around £200 spot to £212 per tonne in November (Ex store). When compared to maize or feeds like sugar beet pulp it's a "must have commodity". We just need to use as much as we can without jeopardising rumen function or it could backfire into acidosis etc.

Current soya prices have started to fall.

In the UK The demonisation of soya based on its unethical production and association with de-forestation particularly in Brazil; has started to lead to a decline in demand.

This is being led initially by environmentalists and now the supermarkets have nudged their suppliers and eventually it look like the use of soya will either be penalised or banned by some of the food chain.

The side effects are interesting.

- Demand for Rape and Distillers grains will increase and prices remain slightly firm.
- Farmers will look at growing protein crops like field beans.
- Grass leys will be "up graded" to include better grass varieties and more clover.
- Silage inoculants will switch to TPT (True Protein Technology) in order to preserve more of the protein in its intact state. We already have this technology and have a product (F 1 EVO) which is a leader in this emerging approach (initial trial work at IGER prompted us to adopt our unique formulation which closely reflects that and subsequent research).

The exchange rate of the Pound and Euro with the dollar has also helped most commodity prices remain firm but we think that by the end of April the prices will start to settle at their summer level. (Ukraine permitting)!

We all know why soya protein prices remain firm but they are hovering around £520 for April 23; and £495 for May 2023. Current Maize prices are also hovering around £260 ex-port spot to April 24 Current London Wheat Futures are around £196 ex store. Prices about right on 30/03/2023.

Current Crude Protein Cost Comparisons of some Protein Sources

	Price £ Per Tonne	Dry Matter %	Cost per Tonne DM	Energy Mj/Kg DM	£ Cost per MJ Per tonne D M	Protein % DM	£ Cost per % CP Per tonne D M	Average £ cost per MJ & %CP /T DM	
De Hulled (Hipro) Soya Ext Meal	525	90	583.33	13.8	42.27	53.33	9.99	35.07	delivered
Argentinian Soya Ext Meal	510	89	573.03	13	44.08	42.4	12.03	38.81	delivered
Lo Pro Soya Ext Meal	500	89	561.80	13	43.22	44	0.00	21.61	delivered
Soypass	586	90	651.11	13.6	47.88	48	16.88	47.46	delivered
NovaPro	483	88.5	545.76	13.1	41.66	34.85	13.06	39.04	delivered
Rapeseed Ext Meal	340	90	377.78	11.8	32.02	37	9.46	29.19	delivered
Rapeseed Exp Meal	430	89	483.15	13.2	36.60	35.4	10.31	32.67	delivered
Optigen	2560	99	2585.86	36	71.83	275	8.08	47.18	delivered
Dry Wheat Grains	325	90	361.11	13.4	26.95	34	10.62	28.28	delivered
Dry Maize Grains	320	90	355.56	13.6	26.14	30	11.85	29.59	delivered

Includes @ £25 for delivered bulk 29 tonne on farm prices give or take! Prices on 25 January 2023

- Note Optigen Price has just dropped by £310 to @ £2250 per tonne.
- **F1 Yeast** The existing **F1 Yeast** and **F1 Prosecure 1 and 2** are all available now so if you check out our web site you will get all of the fine detail. The web link is as follows: - www.lakescot.co.uk/f1-yeast/
- **Mawerlac Gold** is a great substitute for most other refined fats. It is a 100% fat product (no carrier) and at 38MJ/KG DM its even better value for money than just about all of the others at the moment!
- **Feed grade Urea** is around £700 per tonne and dropping which looks great on paper but bear in mind that although it is much lower in price than Optigen it's volatility means that is only viable for around 2 hours in a typical farm mix and after that it has disappeared into the atmosphere as ammonia gas! Optigen will last all day and only get slowly released after it gets into the rumen and its protection is released by body heat.

For more information on any of the items mentioned in this newsletter please get in touch with Jerry (best on his mobile). Our phone numbers are always available during normal working hours. You can also email Jerry or visit the Lakeland-Scottish website.

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Email jerry@lakelandscottish.co.uk **Constantly updating website www.lakescot.co.uk**