



How are we supposed to deal with this?

Contents

- Introduction
- Calf Milk Replacer vs Whole Milk.
- Rumen Buffering and Heat Stress.
- Heifer Replacement Costs.
- Choline to Dry Cows is Good for Calves!
- Mineral Market Update.
- Commodity Market Update.



Introduction

The war in the Ukraine has dominated the news since it started over two months ago. The situation is incredibly volatile. This makes planning forward just about impossible since no one knows how feed supplies will pan out! The Russian media pumps out various spins on Putin's strategies but no one can trust anything that they publish, so if their policy is to confuse the markets they are doing quite well. The fact is that grain will be pretty tight and oil, gas, fertiliser, and sunflower will be a challenge for the foreseeable future, so we need to adapt and try and reduce our reliance on these inputs where we can.

Covid is also still a powerful influence on the markets. We are currently seeing just how much the Chinese shutdown of Shanghai is having on world prices for soya and wheat in particular. The Chinese pig industry along with many other countries is in free fall at the moment due to surging soya and wheat prices and lower demand for more expensive pork. This leads me to think that worldwide inflation is definitely hitting the pockets of a much higher portion of the population than anyone expected. Economies are bound to stagnate as a result.

Meanwhile in the UK changes in agricultural and environmental legislation are emerging from government. The predictable outcome is that the size of the support budget is diminishing and the redirection of money into supporting environmental initiatives does nothing for food production!

Now I don't usually comment on this stuff but I was at the SFT (Society of Food Technologists) annual ruminant meeting in Coventry on April 21st and listened to three out of six presentations on how farming has to focus on reducing its carbon emissions, and nitrogen and phosphorous use. My burning question is what sort of future does the government believe that UK food production will have? I don't believe that upland suckler and sheep farms will be able to thrive on the grants for environmental initiatives.

The value of the genetic resource in suckler and sheep breeds is immense. It has taken evolution and breeding thousands of years to get to such a richness in resource and the government appears to have little regard for its future.

ELMS (the Environmental Land Management Scheme) has three elements: -

1. The SFI, Sustainable Farming Incentive,
2. Local Nature Recovery which will be rolled out in 2024,
3. And Landscape Recovery.

The SFI will be split into three groups, grassland, moorland and rough grazing, and arable.

There is also an animal health pathway. This will be defined by legislation and enforcement (still being developed). The scheme will require a health and welfare review on farm and grants will be awarded by results. This scheme is linked to a market demand created by public awareness of the importance of good animal health and welfare on farm (The BBC Panorama, program that showed cows being beaten, kicked, and shouted at etc, was used as an example of poor public image of farming and another reason to boycott animal products!)

Other papers looked at the promotion of health, productivity, longevity, fertility, growth, pasture quality etc. Feed efficiency and better agronomy is seen as the pathway to reducing carbon footprints and reducing waste to improve profitability.

Sophie Throup (Morrisons) presented a well-structured paper showing how connected their response is to public demand for certain standards of food production. There is no doubt that their targets for better environmental practice (including zero deforestation for sources of soya and palm by 2025) are demanding but solid. So, if you want to be able to sell your products into this type of market, your inputs will have to be trusted and monitored. They will also demand very high health and welfare standards for all of their meat and fish sources.

Light bulb moment number 1 !

Dry cow diets are low oil diets commonly based on straw, wholecrop and at best moderate silage. Just at a point when the cow needs the two essential fatty acids DHA & EPA for egg setting and the foundation of a successful conception, we cut them off from even a tiny amount of what they need! Come on guys, just feed 120 grams of **Optomega Plus** for the dry period, improve egg quality, repair all the membranes; including the ones in the udder and reap the rewards!

Calf Milk Replacers (CMR's) have seen large cost increases. This is broadly in line with the rise in the milk price. Farmers are asking would it be cheaper to feed whole milk? I thought we should look at the figures. The item below sets out the pros and cons.

Here in the UK no one had really thought about heat stress until someone produced **that chart**, showing the effects of relative humidity and temperature on milk yield. Well, as time has moved on, we have been able to find out a lot more about how heat stress works and the multiple effects that it has.

The supplement manufacturers, (never slow to see an opportunity,) have developed a range of products to help us manage the consequences of heat stress and the need for rumen buffering so I

thought it was worth having a look at this issue and try to evaluate the reward for managing the condition.

Calf Milk Replacer vs Whole Milk

In this comparison I wanted to use our top of the range Britannia CMR and compare it to whole milk because the comparison would be better than a high protein / low fat CMR (not the same profile as milk!)

Whole milk is around 13.5% solids so I have worked on a mix of 135 grams of CMR into 0.9 litre of water because the end result is a volumetric litre at 13.5% solids.

Britannia is currently priced at £2950 per tonne depending on relative differences in haulage and quantity etc. So, the easy bit is that 135 grams of Britannia costs 39.9 pence per litre of CMR.

Pasteurised milk will be more expensive and variable because if its sale value is generally at least 40 pence per litre, the extra costs of the pasteuriser and its running costs will take the true costs up to @ 43 pence per litre. Remember that Johnnes disease is not killed by pasteurisation and the quality of the milk will be variable. Britannia is more fortified with minerals and vitamins than whole milk and is always the same quality.

I guess the conclusion is to stick with it for the duration because the CMR price will follow the milk price and the relative difference will always give it the edge.

Rumen buffering and heat stress

In a recent webinar hosted by Trouw Nutrition the effects of heat stress and its management were discussed in detail

That Temperature, Humidity index, (THI) table that we all use is a great basis for measuring the local effect. We now know that **for every THI point above 68 cows will lose 0.27 Kg of milk !**

The predictions for climate change only serve to magnify this effect so that by 2050 a cow losing 1.5 Kg per day now would be losing 6.5 Kg then.

Once the **68** figure has been exceeded, heat stress will also affect the following: -

- Greater risk of acidosis
- More silent heats
- Reduced uterine blood flow
- Damage to embryos
- More mastitis

- More retained cleansings and metritis
- Increase lameness.

Temperature Humidity Index (THI)									
Relative Humidity %									
C	20	30	40	50	60	70	80	90	100
22	66	66	67	68	69	69	70	71	72
24	68	69	70	70	71	72	73	74	75
26	70	71	72	73	74	75	77	78	79
28	72	73	74	76	77	78	80	81	82
30	74	75	77	78	80	81	83	84	86
32	76	77	79	81	83	84	86	88	90
34	78	80	82	84	85	87	89	91	93
36	80	82	84	86	88	90	93	95	97
38	82	84	86	89	91	93	96	98	100
40	84	86	89	91	94	96	99	101	104

No heat stress
Moderate heat stress
Severe heat stress
Dead cows

50% of the milk drop is down to reduced dry matter intake which is a consequence of increasing lethargy. The other 50% is down to inflammation of membranes and leaky gut syndrome. The leaky gut causes strain on the immune system which is being tested by invading pathogens. This has a very high blood glucose cost and reduces the glucose available for milk production.

Glucose is vital to produce milk. 40 Kg of milk needs 3 Kg of pure blood glucose to produce it. Inflammation can cost 1Kg of glucose in 12 hours!

Strategies for dealing with heat Stress

Check the water supply allow at least 1m water space per 10 cows, (more is better), and check rate of refilling. You should also check the water quality and cleanliness of the water troughs on a regular basis. Avoid excessive walking distances to water supplies

Housed cows should be well ventilated using fans, if possible, when natural air movement is poor.

Comfortable bedding is a great asset to help cudding rates.

The increased risk of acidosis and sub-clinical acidosis should be acknowledged and action needs to be taken to avoid this challenge. The rewards are without question worthwhile.

There are two ways of evaluating this: -

1. The avoidance of a problem is like insurance; you spend money in order to save on the cost of a problem but you don't know how much of a problem it might be! If you think that the risk is significant, then investing in a solution is definitely the right course of action.
2. **The addition of investment in a strategy to avoid the consequences of both heat stress and acidosis will improve both production and health issues** that were not apparent so the strategy has a financial reward in any case! **"A cow with acidosis is hotter than a cow without acidosis".**

So, use a good rumen buffer

In 2016 at the Premier Nutrition TMS conference, Prof Finbar Mulligan UCD contended that "Sub-Acute Rumen Acidosis (SARA) exists in up to 40% of our dairy cows at any one time. Symptoms can sometimes be hard to spot.

The cow strives for a neutral rumen Ph of @ 6.7. Between 6.3 and 5.8 is sub-clinical and anything under 5.8 is clinical. Over processing, low forage effective fibre, excessive unsaturated fat, and excessive starch and sugar (sometimes through sorting) is the cause.

Adding straw helps but dilutes the ration. Chemical buffers and yeasts have been proven to be very effective at UCD trials."

Buffering can be very effective but needs some planning.

There are two vital facts that make the strategy work: -

1. Respect the feeding rate.
2. Start on time, before the hot summer begins.

One thing I have always loved about ruminant nutrition is that moment when the lights come on and you can see a perfect logic in what was always a bit of a "grey area".

Light bulb moment No 2. When cows are hot, they pant and they exhale more carbon dioxide. One of the consequences of this is that there is less saliva produced because it contains sodium bicarbonate and that carbonate is being diverted to CO². So, we have less cudging and more risk of acidosis! (Great piece of logic, isn't it?)

It's another really good reason for using a rumen buffer when we have heat stress conditions!

Always target NDF levels in the diet of dry and fresh cows at no less than 6 Kilos per head per day. This will help the cudging rates.

What makes a good rumen buffer?

- Sodium Bicarbonate, it's what the cows uses in its own saliva.
- Sodium Carbonate
- Magnesium Oxide

- Calcified seaweed
- Betaine (not for heat stress)
- Yeast (great long lasting buffering action)
- Complex buffers like **Equaliser Cool Cow** and **Acidbuf** will do more than the individual components

For **F 1 Yeast** we continually review the product to make sure that it is the best we can present to the market. Our current version contains a full dose of yeast and an activator which accelerates the action of the yeast and enhances the rumen environment for the beneficial microbes.

The activator we are currently using will shortly be replaced by a new super yeast activator that enhances our F1 Yeast further still!

The best results rely on continuous topping up and will give a full 6 to 1 return when all of the above factors have been considered.

Prebiotics

There is a growing interest in the use of prebiotics. Lactic acid utilising bacteria. *Megasphaera elsdenii* is an ecologically important rumen bacterium that metabolises lactate and has been shown to relieve rumen acidosis induced by a high-grain-diet.

We probably need more work before we can find the best delivery method for this but it is exciting because if we can convert the lactate into a more useful nutrient like gluconic acid, we can generate butyrate which in turn, can repair the gut, and is anti-inflammatory.

I thought it was worth repeating this next section in the current context of heat stress, turn out and general advantages of rumen buffering.

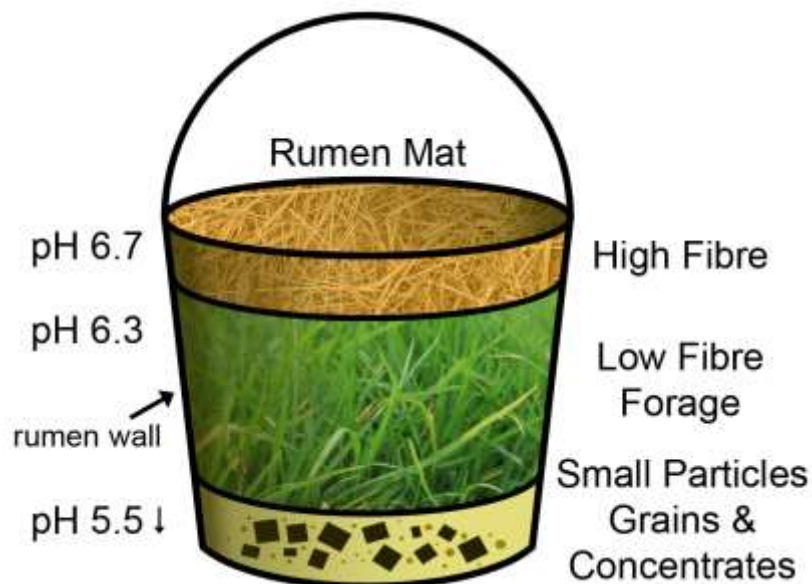
Forage quality both physically and chemically affects the relative pH state of the rumen.

When cows start to suffer from acidosis they start to eat less. They usually go and lie down and start chewing their cuds. Occasionally they will spit them out and these can often be found lying at the front of the cubicle beds.

When they chew cuds, they produce a lot of saliva which is very alkaline and contains sodium bicarbonate. Gradually as they swallow more and more cuds the pH in the rumen starts to recover and the acidity begins to drop. This takes time and whilst it is happening the intake potential drops and the milk yields begin to suffer.

The bucket analogy shown on the next page highlights how the forages and the concentrates in the rumen are fermented by different pH tolerant rumen bacteria.

The rumen will produce around 2 Kilos or more of rumen bacteria (MCP) in a day. It will produce most efficiently when the Rumen pH is between 6.3 and 6.7. So, rather than have the pH zones shown on the graphic below it works much better if the scratch reflex is good and the rumen can “Churn” a bit like a front-loading washing machine only slower and mix all the zone pH’s together!



The treatment will range from adding some scratchy fibre like good brittle and clean wheat straw, to adding a chemical buffer like Sodium Bicarbonate or something stronger like Acidbuf. Live Yeast has been shown to be a great buffer in most situations although it doesn't like extreme acidity.

Check out our website for rumen buffers for more on dealing with acidosis, www.lakescot.co.uk/rumen-buffers/ The dividends for good buffering are always better rumen function and better milk and milk quality output.

Heifer Replacement Costings

A recent study by Dr Ginny Sherwin (University of Nottingham) looked at the true costs of rearing heifers and how this can be influenced by looking at feeding and management practice. I have rounded some of the figures that she used in her recent webinar presentation.

Her costings conclude that when everything is taken in to account an a reasonably good and well manged unit typical costs were running at around £1900 per heifer to calving at 23 months.

Current figures would inflate this figure to about £2100 per heifer.

We know that attention to detail spent on the early calf phase of the animals life can have a major influence on the long-term success of the animal when it enters the herd.

A good example of this came from research done into how increasing the intake of milk solids in early life can reduce the animals susceptibility to disease challenges whist at the same time improve the long-term potential of the animal for more production. The feed conversion efficiency (FCE) of baby calves is nearly 1 to 1.1 so it makes sense to take advantage of this because it is also cost-effective live weight gain.

Playing catch up when the heifers are pregnant, is not cost effective because the extra feed needed will not be converted as efficiently and the type of extra growth has a greater percentage of fat.

We also know that smaller heifers at bulling have much worse conception rates than animals that achieve their target weight. In trials monitored by Trouw Nutrition conception rates on conventionally fed heifer calves bullied at 15 months were @ 40% whereas the calves fed on the Britannia type protocol had a 77% conception rate to first service!

This also affects age at first calving. Current UK data shows that a heifer calving at say 26 months of age is costing £172.20p more than a 24-month calving heifer and an animal calving at 28 months is costing £344.40. If that was the average for say, 50 heifers there is a potential saving of £17220.00p per year!

We also know that the UK average shows between 15 and 20% heifers never make it to a second lactation. This means that they have not re-paid their rearing costs. Most of these heifers are culled because of poor fertility. (Although I do know one farmer that culls quite a few on the basis of temperament!). The better fed calves have a lower first lactation culling rates because they get into calf much earlier and more often.

Put simply: "If you are born into a hard life, you gene sequence down for a less productive life so that you have a reduced stress to produce more and you can cope better with a restricted diet. If you are born into a land of plenty you gene sequence up for a more resilient, productive, and longer life".

The outcome of the early phase of rearing will have a major effect on profitability of the animal because if the animal has say, an extra lactation gets back into calf sooner and produces more milk per lactation; she will contribute much more profit.

All of these benefits have been shown to be real in the calf trials. Once they have joined the herd the performance of the well-fed calves joining the herd compared to animals on a lower plane of nutrition as calves have been.

Feeding Protected Choline to Dry Cows Gives their Calves a Major Boost

Balchem recently held a webinar where they presented an update on the benefits of feeding Protected Choline (Reashure®) to Close Up and Fresh dairy cows.

Dr Heather White Associate Professor, Department of Animal & Dairy Sciences University of Wisconsin Madison gave a broad presentation showing the trials that support the yield benefits of 2.2 litres per cow per day and better post calving reduction of ketosis.

One new piece of research, well it is to me! is the 2018 work shown below by Zenobi et al.

This clearly shows that calves born to cows that were supplemented pre-calving with protected choline had statistically better average daily gain than calves whose mothers were not supplemented. This is an important advantage to heifer calves that can improve lifetime performance if they thrive better in early life!

Calves born to Cows fed RP Choline have increased average daily gain (ADG)



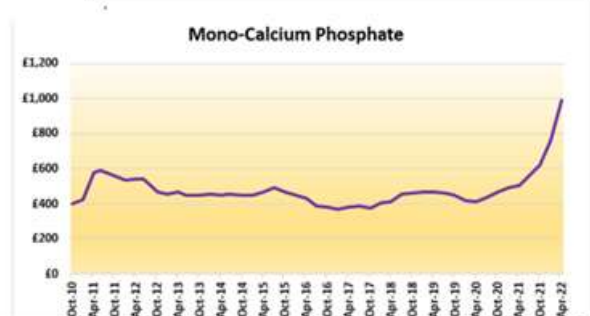
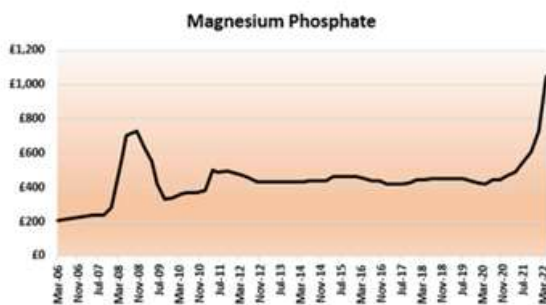
Birth to ~50 weeks of age by <u>heifers</u>		Birth to 5 weeks of age by <u>bulls</u> (given LPS)
2015	2017	2017
0.80 vs. 0.85 kg/d	0.77 vs. 0.82 kg/d	0.44 vs. 0.56 kg/d
$P = 0.06$	$P = 0.09$	$P = 0.06$
$n = 35$	$n = 46$	$n = 38$

Zenobi et al., 2018, JDS; Zenobi et al., 2018 abstract



Mineral Markets

The graphs below say it all really! Magnesium and Phosphorous prices are rocketing!



Credit: Mole Valley Feed Solutions

Fortunately, most of our customers were advised in advance about the spiralling costs. There are some key things to watch out for though.

- Rumen buffers will rise in price in the near future so it could be worth taking some cover.
- Sodium Bicarbonate availability is good
- Calcined Magnesite and Magnesium Chloride prices and availability are both challenged just at a time when we need supplement them to avoid Grass Staggers (Hypomagnesaemia) at turn out!

- Zinc Sulphate is gradually replacing Copper Sulphate in footbaths.
- Himalayan Pink Rock Salt is back! Albeit more expensive due to greatly inflated freight rates.
- Many farmers still feed higher levels of Phosphorous than needed. We could help you save some money by checking and reformulating your mineral supplements. Give us a call.

Raw Material Markets

Current Soya prices have risen to levels never seen before. We all know why but they are hovering around £480 for May - July 22; £472 for Aug – Oct and £460 for Nov – Apr 2023. It was £356 and £350 ex-port a year ago! Current Maize prices are also hovering around £322 ex-port spot to Oct 22. It was £217 ex-port a year ago! Current London Wheat Futures are around £322 ex store spot and £288 Nov 22 It was £215 and £201 ex store a year ago. Molasses looks cheap this spring!

Current Crude Protein Cost Comparisons of some Protein Sources

	Price £	Dry Matter	Cost per	Energy	£ Cost per MJ	Protein	£ Cost per % CP	Average £ cost per	
	Per Tonne	%	Tonne DM	Mj/Kg DM	Per tonne D M	% DM	Per tonne D M	MJ & %CP /T DM	
De Hulled (Hipro) Soya Ext Meal	510	89	573.03	13.8	41.52	52.53	7.27	30.90	delivered
Argentinian Soya Ext Meal		89	0.00	13	0.00	42.4	0.00	0.00	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	11.77	40.35	delivered
NovaPro	483	88.5	545.76	13.1	41.66	34.85	9.47	34.04	delivered
Rapeseed Ext Meal	428	91	470.33	11.8	39.86	37	7.70	30.67	delivered
Rapeseed Exp Meal	430	89	483.15	13.2	36.60	35.4	7.57	28.85	delivered
Optigen	2560	99	2585.86	36	71.83	275	7.35	46.16	delivered
Dry Wheat Grains	435	90	483.33	14.5	33.33	34	14.22	36.48	delivered
Dry Maize Grains	435	90	483.33	15	32.22	30	16.11	38.57	delivered

Includes @ £25 for delivered bulk 29 tonne on farm prices give or take! Prices on 25th April 2022

Bullet Points

- **Silage additives**
Our own range of additives offer well proven products like the comprehensive multiple bacteria and multiple enzyme **F1 Evo** or the simple but effective **F1 Sprint** which works well in less challenging conditions.
- **Improve feed efficiency and reduce your carbon footprint.** **F1 Yeast** has some more EFSA proofs to show its superiority to other strains. We will also be promoting **F1 Yeast** over the next few weeks because the approval now places this product as the top choice of any yeast supplement in the UK as we go to press. The web link is as follows: -
www.lakescot.co.uk/f1-yeast/

For more information on any of the items mentioned in this newsletter please get in touch with Jerry or Richard. 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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