

Lakeland-Scottish Feeds & Services Newsletter

Re-Inventing the Wheel!

Issue No 138*

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Introduction

Back in the real world of day-to-day farming in the UK, we are gradually evolving our approach to carbon efficiency whilst still trying to remain not only viable but profitable and successful. (Not too much to ask for you might say). The interested parties need to recognise our need to have a viable farming business. To my mind there are too many of the ideologists who seem to think that we can change to the new utopia without needing to make a profit!

The **BSAS** (British Society of Animal Science) **Dairy Conference** at Telford brought together a great selection of progressive dairy scientists to present their research and ideas to help us make some progress in the best ways possible. The items below represent some of the more realistic options put in front of us and point us in the right direction. The big question now is how we make it work in a practical way. For many farmers there are probably already quite a few options that they have been thinking about so it may just be a question of putting those plans into action.

Interestingly all of the papers ignored the carbon agenda in favour of improving efficiency and overall opportunities for better management practice. This obvious reluctance to address the elephant in the room was no doubt due to the lack of a clear policy and direction.

National Academies of Sciences, Engineering, and Medicine. (NASEM for short) is the American based body that published the 2021 revised and updated version of the "Nutritional Requirements for Livestock". One of the more interesting changes was the reduction in the requirements for Phosphorous. This advice would seem to indicate that in the majority of diets for cows, there is enough background phosphorus in the diet to justify no addition in the mineral supplements. But maybe there is more to it than that! (see below)

February 2024

The rumen is basically a biological soup that we now refer to as a "biome"! The content of bacteria and microorganisms (protozoa) produced, varies but its normally around 2 kilo's a day. The thing is, that the species of microbes adapt to any changes of diet on a constant basis so do we need to bear this in mind when we formulate rations? (This is a huge variable from cow to cow, day to day and TMR to TMR)! There is a very big opportunity here, (see below).

The Basics! Do you want to know more?!

On the 10th and 11th of January I attended the BSAS Dairy Conference at Telford. This was a very good presentation of some progressive research into a practical approach to improving efficiency at farm level. I know a few farmers who are very sceptical about the commercial outcomes of meetings like this. "The only things that ever come out of them is more essential and expensive supplements that we don't need!"

I can't agree with that. I will concede that for many farmers getting the "basics" right has to come first, but there is no doubt that if the basics are right, some of the advances offered by science can be very good and profitable for the farmers who are able to place the changes accurately. This ability is a bit like getting the Stig to drive your car, you are definitely going to win!



Outside the meeting some of the conversations were very interesting. It occurred to some of the older members of this group, that our generation has had much more experience than our up-and-coming successors. Sometimes what we take for granted is not something that the new generation will necessarily know or understand. It's therefore a good time to re-invent the wheel!

So, there is much we can do to help, firstly, I would also encourage our younger farmers to have a look at the nutrition sections of our web site. It has been written in layman's terms and will provide a good understanding of the basic principles involved in feeding ruminants. The sections are General, Dairy, Beef, Sheep, and Heifer.

I know that 99% of you won't have the time so here are a couple of things to think about:-

In a previous life I ran several nutrition courses for **LANTRA** (Land Based and Environmental Training) as a registered trainer so If you like I can do it again!

- We can arrange a single crash or taster session for farmers who aren't sure if they would benefit from a more in-depth short training course. All of the courses are up to date and tend to be interactive. It doesn't matter if you think a question is a bit simple because the chances are that most of the other attendees will be thinking the same, so always worth asking. Its also much more enjoyable if you get involved!
- We can arrange a short training course of four, 4½ hour sessions in a meeting room at the local hotel or pub (2½ hours followed by lunch and then 2 hours) 9:30am to 3:00pm. The first 3 sessions on basic nutrition including how to calculate and formulate diets and which feeds we should use for a cost-effective diet that balances our forages.

At the end of the first three courses attendees will have a much better idea of what the animals requirements are and how they need to be balanced. They will be able to construct simple diets and work out seasonal feed requirements.

Many students prefer to still use a good adviser but they will understand a lot more of the information that is discussed, and how to apply the diets to best effect.

- The fourth session would be specific to one of the following:-Dairy, Beef, Sheep, and Calf and Heifer replacements.
 We can add extra sessions if needed.
- We can also add specific sessions on silage making, selecting grass seed mixes, and dry cow management.
- I have access to some great presenters from our industry who can contribute to the content of these courses, especially in the last sessions.
- Everyone who attends will have full access to all of the notes so you don't even have to write stuff down unless you want to!

If there are any of you reading this who could put together a group that would like to do this, please let me know and we can arrange it. (My contact details are on the back page of this newsletter).

The course itself would be a minimal cost to cover the overheads including time, room, and materials. There would have to be a charge for catering but that's about it. We can finalise this when we know exactly how many farmers wish to attend.

BSAS January 2024

This conference kicked off on day one with a look at feed analysis and interpretation.

I won't try and give a detailed account of the papers just some useful bullet points.

- There is no point in sending samples of TMR for analysis, the results will be unrepresentative and if there is variation in the forage or there is sorting in the trough they will not give good enough management information.
- A cow's sense of smell is 18 times more sensitive than a human.
- The optimum Lactic acid to Acetic acid ratio in grass silage is around 4 to 1
- Treatment of grain can alter its fermentation characteristics. Whist there is no real difference between milling and crimping there are some benefits between Soda grain and bruised or milled grain.
- Moist grain as in maize silage for example is more rumen fermentable than dried maize meal.
- Ammonia treatment of cereals tends to shift the digestion site more from the rumen to the small intestine providing some benefits although milk and blood urea levels should be monitored.
- Urea / Urease can be used instead of ammonia. Both Urea, Urease and Ammonia can give some production and milk protein benefits, but when used to replace soya milk ure percentage increase and fertility may be impacted.
- A key fact was revealed that surprised many of the delegates. The heat treatment of rape seed meal can be very negative. As the temperature increases the availability of the key amino acids lysine and methionine decreases. (Novapro is a cold pressed product)
- Also, feeding "protected" proteins tends to reduce the production of the richest protein source in the whole diet, MCP (Microbial Crude Protein). This can reduce the advantage considerably.

There were other papers presented on day one about optimising grazing systems but I didn't think there was anything new.

David Davis concluded the session with some great stuff on silage making. I made a note that cutting at midday and uplifting from 8:00pm in good drying conditions would minimise dry matter nutrient losses. A clean crop and great clamp management are obviously critical.

Two little quotes on silage:

1. Short and dry or long and wet!



2. Maximise the nutrients and minimise the losses!

Day two started with James McCulloch OBE head of AIC looking at world market trends and the effects of conflicts in the Ukraine and Yemen. How these can re-set the supply options and how the "Gatekeeping" role protects our food safety.

There was then a three-part presentation by Dr Ginny Sherwin from Nottingham university on the feeding and management of calves. It was excellent but since I have covered most of it in previous newsletters, I just show a couple of her slides below.

The value of increasing colostrum volumes is very clear in this trial. Current advice is to feed a minimum of 6 litres in the first 12 hours followed by more doses up to 24 hours.

	term impact	of colostrum	2
What is the long	term impact	or colosti an	
	2L colostrum	4L colostrum	Significance
Number of calves	37	31	
DWLG (kg/d)	0.80	1.03	P<0.05
Age at first insemination	14.0	13.5	N/S
Present after 2 nd lactation (%)	75.7	87.1	P<0.05
Milk yield in 1 st and 2 nd	16,015	17,042	P<0.05

The penultimate presentation was by Alistair McCrae Professor in Farm Animal Health and Production, and Head of the Dairy Herd Health and Productivity Service (DHHPS) at the Royal (Dick) School of Veterinary Studies at the University of Edinburgh.

His presentation on practical feeding of the dairy cow emphasised the need to get the systems right. A far off and close up dry cow system for 5 and 3 weeks respectively.

- Maximising dry matter intakes close up has a very beneficial effect post calving (6 Kg NDF), it also reduces susceptibility to metritis post calving.
- Stress caused by mixing cows from batch to batch can have a big effect on individual cow intakes. Not over stocking is a big help especially in the close-up group. Red Tractor recommends a minimum of 6.5 sq m total space per cow, and AHDB recommends 10.5 sq m per cow. Close-up dry cow space allowances are frequently recommended at a minimum of 12.5 sq m per cow or more.
- The Goldilocks diet is a great model but chopping straw to 2.5 cm will increase dry matter intakes significantly over long straw. Adding water to the TMR for this group (target 45%DM) will also increase intakes. Adding molasses also increases intakes but surprisingly has no effect on sorting.
- Top dressing with molasses or (F 1 Elevator or Glycopass) would also increase the intakes.
- In the UK we have 45% sub-clinical milk fever! 5% is clinical!
- Use either a DCAD system (target 150 meq / kg DM. Urine Ph 6 6.5.
- Or use a Calcium / Phosphorous binder like X=Zelit.

The last presentation was by Professor Liam Sinclair Professor of Animal Science at Harper Adams University and past President of the British Society of Animal Science.

He started his presentation with a great quote:-

"More feed needs to be produced in the next 50 years than has been produced in the whole of human history"! (Clark 2009)

The presentation was centred on improving feed efficiency whilst reducing nitrogen emissions by 16% (UK Government target).

This is an ongoing process by which we need to improve protein metabolism, reduce pollution and reduce urinary urea output.

So, there it was, just a few pointers to our need to evolve and fine tune our approach to feeding.

Going back to my friend who keeps telling me "It's all about the basics" I can't help but agree but at the same time I think we have to focus on how to improve where we can.

To that end I have undertaken a comprehensive review of the principles of good ruminant nutrition. Much of the development of our systems over the last few decades has been needed to keep up with the diverse needs of our industry whether it's intensive dairy, beef or sheep, grass based, extensive or organic.

As a result, and bearing in mind some brilliant product developments, Lakeland-Scottish Feeds & Services and TBA will (over the next few months), revise our product ranges to include some new versions of some of our older reliable and successful products whilst looking at some of the more niche new science-based products that we can offer.

Managing Phosphorous for the Dry Cow

Phosphorous is a really important macro mineral.

- Phosphorus (P) is a major contributor to muscle and bone health.
- It is essential for metabolism in particular energy transfer at a cellular level via a molecule known at ATP (Adenosine triphosphate).
- It is also particularly important for improving cattle growth, health, and milk production.

The National Academies of Sciences, Engineering, and Medicine. (NASEM for short) revised phosphorous requirements published in December 2021 for dairy cows are shown below. The key target is between 2.8 and 3.9 grams per kilo of dry matter. The most common target level is 3.6 grams per kilo of dry matter. These levels will minimise waste residues and environmental impacts.

Most diets will achieve this without the need for supplemental phosphorous but there could be a problem with this assumption.

Total phosphorus is not the same as available phosphorus!

Phytin, or myo-inositol hexakisphosphate (InsP6), is stored form of phosphorus (P) seeds of cereals and legumes. It has a strong tendency to chelate metallic cations Ca, Fe, K, Mg, Mn, and Zn and form insoluble complexes which renders them unavailable to animals or humans fed on seed diet. (Google)

This complicated piece of biochemistry basically explains why we need to be careful when formulating for the correct level of available dietary phosphorous.

The good news is that around two-thirds to three quarters of phosphorus in concentrate feedstuffs is in the form of phytate. This can be broken down by phytase enzyme in to soluble phosphorous. Personally, I am reluctant to work mineral supplements at zero phosphorous but happy to minimise the level fed to just one or two percent.

When using a calcium binder like X-Zelit, it is important to remember that it also binds phosphorous. The hormone and enzyme driven release from body reserves of both elements at calving is very effective at avoiding both types of milk fever.

Feeding recommendations for the neat product are shown in the table below.

	Prefresh Dry Matter Intake: lbs/cow						Prefresh Dry Matter Intake: kg/cow						
	22 lbs	24 lbs	26 lbs	28 lbs	30 lbs	32 lbs	10 kg	11 kg	12 kg	13 kg	14 kg	15 kg	
% Dietary Phosphorus	X-Zelit [®] Feeding Rate: lbs/cow							X-Zelit Feeding Rate: grams/cow					
.2831%	.60	.65	.70	.75	.80	.85	275	300	325	350	375	400	.2831%
.3235%	.65	.70	.80	.85	.90	.95	300	325	375	400	425	450	.3235%
.3639%	.75	.80	.90	.95	1.0	1.05	350	375	400	450	475	500	.3639%

X-ZELIT® FEEDING RATE RECOMMENDATIONS

How to Optimise the Rumen Microbiome

In a perfect world the cow or sheep would eat a perfectly balance and constant diet that was nutrient rich and good enough to supply all of its needs without any excess or deficiency according to its age, liveweight, growth, pregnancy and milk production.

The rumen microbes would be able to supply the animal with pretty well all of its essential nutrients without the need for much supplementation

In real life it doesn't happen. Modern animals have been bred to produce much more than their laid back, easy living ancestors!

The rumen is still king when it comes to supplying the cow with essential nutrients. All of the bacteria and microbes that pass through to the abomasum collectively supply the animal with the richest of any of the other feedstuffs by a pretty massive margin.

So it's definitely in our best interests to feed the animal for maximum output of MCP (microbial crude protein).

What is really interesting is that the rumen microbes adjust constantly to what the cow is eating.

This means that each cow probably has its own unique set of microbes but they will all be influenced by what is in the trough or out in the field.

To this end we have noticed that when we feed live yeast in a well balanced diet we always get an initial lift in production. Some animals do much better than others. If we then change the diet we can get varied responses from individual animals.

Lakeland-Scottish Feeds & Services and TBA have been quietly working with a new concept that will revolutionise the way we supplement cows with not only yeast but other microbiome adjusting products including metabolites, dead yeast and rumen regulators.

We are currently looking for a few farmers who might like to get involved with some commercial trials of a new product range called **F1 Adapt**. Please get in touch if you are interested.

Thanks

Raw Material Markets

The markets seem to be dropping steadily at the moment but the daily fluctuation in both spot and future prices means that anything that gets published here will probably be a bit different should you decide to order. Its worth remembering that some products that would normally be shipped through the Suez Canal are likely to be incurring delay and extra shipping charges.

I have also decided to stick to the commodities that are a bit more reliable for supply and contractable pricing.

From now on these will include the following products: -

- Molasses and Molasses Blends
- Pea and Bean Meal (great value at the moment)!
- High Starch Maize meal in Totes (currently dropping in price for the summer).
- Sugar Beet Pulp (in season but still some availability).
- Trident Distillers Grains and Prairie Meal in Totes.
- 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/ Watch out for the new F1 Adapt range.
- Britannia. Our new Patriot Gold performance pack is another reason to try this product.

This performance pack sets Britannia a long way ahead of its competitors. There are some unique extra additions which are research backed, proven products designed to make the calves early life more productive and resistant to immunity challenges.

- The revised protocols advising phased feeding between day one and day 10 of transition
 milk and or fortification with colostrum (natural or dried) should be adopted. Dairy heifers
 will benefit enormously and because whey protein does not clot, skim-based calf milk
 replacers like Britannia should definitely be fed for the first four weeks and preferably right
 though to weaning. Pasteurised cows milk will generally be first choice but be aware that it
 can vary and may not always give the best results.
- **Mawerlac Gold** is a great substitute for most other refined fats. It is a 100% fat product (no carrier) and at 38MJ/KG DM it's still even better value for money than just about all of the others at the moment! Worth contracting to the end of April because prices will probably rise due to extra shipping costs avoiding the Suez Canal.

Feed grade Urea is around £650 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.

Smartpro and Metasmart. Protected Methionine has many effects on the cow's metabolism: -

- Improves milk yield, milk fat, and milk protein significantly. •
- Improves cow health, reduced levels of displaced abomasum, reduced ketosis, reduced mastitis and reduced somatic cell counts.
- Improves reproductive efficiency with significantly more retained pregnancies.

The real key to success is down to how the methionine is protected, and its balance with lysine. Lysine is not normally deficient in rumen diets so it is normally methionine that we should supplement.

In layman's terms there are two pathways and we can tailor the cows response to methionine by which pathway we choose.

The first pathway is rumen available methionine. This will stimulate the production of more rumen microbes (MCP) which are themselves a great source of nutrients for the cow. This pathway also stimulates milk fat production by reducing the metabolic compounds that reduce fat synthesis. So, in summary the rumen available methionine is both butterfat and yield positive.

The second pathway is the fully rumen protected version. The methionine is released in the abomasum and absorbed in the small intestine. This pathway elevates blood plasma methionine levels promotes better liver function, increases antioxidant levels, decreases inflammation, and improves oxidative stress capacity. The net result is more milk, milk protein and better health and reproduction performance.

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. Telephone 01768 899513 Mobile 07711 034141

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