



Improving Milk Quality

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Introduction

The current volatility in the feed markets seems to include supplements and straight feeds as well as compounds, blends, milk powders, and just about everything else. This means that it is worth keeping all options open. Some products that historically looked like they didn't figure, may now be really useful choices!

The unstoppable move towards a palm fat free ruminant diet is prompting us to have a renewed look at alternative products. Methionine is one such product and I have taken the chance to review its place in dairy diets.

Many farmers offer their stock ad lib salt licks. Ruminants will not generally bother to take up the opportunity if they are not needing it. This makes pure, un-spiced salt almost unique as minerals go. There might be some occasions where offering salt or adding it to the mix may not really be a good idea!

Both Lakeland-Scottish Feeds & Services and TBA have had to wave goodbye to a great product.

F1 Super Fat is no longer available the last pallet was delivered at the end of May. The main reason for this is the spasmodic availability of Golden Flake, its key ingredient and the manufacturers want to keep the production line running full time so have switched into coarse mixes instead. See below for more details.

Mineral prices took a major jump in price back in April, but for many farmers its only when they re-order that they are seeing the big increase in cost. The average seems to be between 20% and 30%! I suppose that when you consider that most prices were fixed back in October until the end of April the jump is more dramatic than if it had been trickled into the market gradually.

I am happy to look at re-formulation with anyone who wants to see if the costs can be cut but I think that it could well impact long term performance and could be a false economy. But if you want to check maybe now is the time.

Increase Milk Fat and Protein without C16!

Everyone is, by now aware of the move away from using palm fat supplements to increase yield and milk fats by introducing various proportions of C16 and C18 fatty acids. This is seen to be a significant step in reducing both carbon footprint and costs of the milking cow diets. It also reduces demand for palm oil and should halt the need to replace rainforests with new palm plantations.

Up until now the challenge of taking protected fats out of the equation has been very difficult to justify because we all know how yield responsive the cows are to good, protected fats.

Well now we have a very well researched alternative. It's not a particularly new solution but it has in many cases been overlooked because the fats are a more obvious choice. Methionine has been shunned by most farmers because it is expensive and protected fats are tried tested and easy. The truth is that protected methionine is now very cost effective, partly due to the increased price of the fats but mainly due to its reliable response. (Normally over 3 or 4 weeks, but can be faster)

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 protein and better health and reproduction performance.

So where does this leave us?

We have been in discussion with the key supplier of the different forms of protected Methionine and Lysine. The result is a unique blend of the key elements needed to stimulate firstly milk fat and protein and secondly yield health and reproductive efficiency.

The result is **F1 Met Pack 30** which is a 50-gram supplement that will deliver the full recommendation level of protected methionine and satisfy all constraints. Adisseo also market Metasmart, Smartamine and Rumensmart but we can also offer Smartpro. All of the versions will benefit performance but we believe that after looking at the modes of action **F1 Met Pack 30** is the best choice.

What about the protected fats? We know that these fats have to be processed in the liver so the key to their successful use is a healthy liver!

Protected choline, niacin, and methionine will all help to keep this key organ working at peak efficiency. The use of the fats under these conditions should add to the benefits of using protected methionine.

The new **F 1** Supa Fat range

We have taken the opportunity to review our fat supplement range and we are launching three new products. See our web site for more detailed information. <https://lakescot.co.uk/f1-supafat>

The **F1 Supa Fat** range is as follows: -

- **F 1 Supa Fat Sustain (Palm Free)**
- **F 1 Supa Fat**
- **F 1 Supa Fat Cream**
- The **F 1 Supa Fat Sustain** is a palm free version takes up from the old **F 1 Super Fat** in being a similar price and performance response. The palm free status of this product makes it the number one choice for those wishing to feed a high energy, butterfat positive product.

F 1 Supa Fat Sustain contains some non-palm fat sourced C16 in its specification this means that although it is yield positive it will sustain butterfat levels as the milk yield increase.

The new **F 1 Supa Fat** version is a major upgrade to a higher energy specification that still contains palm oil. It is a multipurpose supplement that will boost both butterfat to a small extent and yield by typically 2.5 litres when fed at 0.5 Kg.

The **F 1 Supa Fat Cream** version is designed as a supplement that will have a major effect in boosting milk fat and a smaller effect on yield than the standard **F 1 Supa Fat**.

Should we feed salt?

The short answer is that we recommend offering rock salt on an ad lib basis in most cases but it's a bit more complicated than that!

The most common form of both elements is sodium chloride or common salt. Chemical formula NaCl. There are many other forms of mineral salts but sodium chloride is the one we are interested in for this article.

Sodium is the sixth most abundant element in the earth's crust and is the second most abundant element in sea water next to chlorine.

Salt is normally the most common form of both elements in the diet.

Most plant and plant-based products contain relatively low levels of sodium and chloride, but occasionally silage analysis can show relatively high levels, especially when there has been industrial waste spreading (ie print paper which can contain added sodium).

Sodium is needed for many essential body functions:

- Sodium is a major extra cellular cation.
- Key electrolyte with potassium and chorine.
- Essential in osmosis.
- Essential for nutrient transfer to cells and removal of waste.
- Key appetite stimulant.
- Body water regulation.
- Stomach pH control
- Muscle and heart function
- Absorbtion of sugars and amino acids
- Transmission of nerve impulses
- Constituent of saliva salts to buffer acidity
- Essential ingredient to the sodium-potassium pump for glucose, amino acid and phosphate transport into cells and calcium, bicarbonate, chloride, hydrogen, and potassium ions out of cells.

This means that sodium is crucial for good osmotic and acid-base balance in the body it is vital for muscle/cell formation (growth), efficient use of energy and protein, and absorption of water-soluble vitamins.

Sodium is very efficiently absorbed through the small intestines. Ruminants can absorb sodium in most other parts of the rumen and duodenum.

80% of sodium and chloride entering the GI tract is from internal secretions, ie:- saliva, gastric fluids, bile, and pancreatic secretions.

Chlorine is needed for many key body functions:

- Chlorine is a major extra cellular anion and forms more than 60% of all of the anion equivalents.
- Major electrolyte with potassium and sodium in regulation of acid-base balance.
- Found in large amounts within and without the cells of all body tissues.
- Chlorine is essential for the transport of carbon dioxide.
- It is involved in producing gastric fluids and stomach pH.
- It is a part of hydrochloric acid needed for both protein digestion and iron absorption.
- Activation of enzymes like pancreatic juices and amylase.
- Chlorine is involved in respiration and regulation of blood pH.
- Regulation of water balance.
- Osmosis and body fluid balance.

This means that chlorine has many vital functions in line with sodium but also can suppress microbial growth if in great excess and unlike sodium can encourage calcium absorption. Typically, use of magnesium chloride for close up dry cows.

Chlorine is efficiently absorbed like sodium, in the small intestine.

How much sodium and chloride is required by a typical lactating dairy cow?

NRC is probably the best reference for this and it is not specific. The requirement is quoted as a range.

Sodium = 2 to 3.4 grams per kilo dry matter intake.

Chlorine = 2.5 to 4 grams per kilo dry matter intake.

Example: -

Take a 700 Kg cow with an intake of 21 Kg dry matter:

Diet: -

13 Kg DM silage 0.61% sodium and 1.8% chloride. (I have chosen an example from real life with high levels of both sodium and chloride to test the limits within a normal range.)

8 Kg DM typical compound feed.

13 Kg x 0.61 % = 79.3g sodium 8 x .227% = 18.2g sodium. Total 97.5 grams or 4.64g/Kg DM

13Kg x 1.8% = 234g chloride 8 x .352% = 28.2 g chloride Total 262.2 grams or 12.5g/Kg DM

Maximum tolerable levels for both elements are published (Ewing & Charlton 2005) as **15.7g/Kg DM** for lactating cattle and **35.4g/ Kg DM** for non-lactating cattle for **sodium**.

They are **24.3g/Kg DM** for lactating cattle and **54.6g/Kg DM** for non-lactating cattle for **chloride**.

This would indicate that although the levels supplied are high, they are well within the tolerances.

In this type of situation there is an obvious need to check water supplies are adequate.

Normally sodium and chloride levels are much lower than in this example and because salt can be limiting, the practice of offering salt licks or rock salt on an ad-lib basis should not be discouraged.

This example does highlight the need for routine mineral checks on forages in order to be aware of opportunities to tailor mineral supplementation more closely.

Rapeseed Meal vs HiPro Soya

We have been here a few times in the last few years. This time the relative value of the two products looks to have changed, or has it?

Current Hi Pro Soya price is @ £483 per tonne (full loads delivered)

Current Extracted Rapeseed Meal price is @ 320 per tonne.

So extracted Rapeseed meal look cheap, doesn't it?

Hi Pro Soya is say. 90% Dry Matter 48% Crude Protein = 53,33% CP in the Dry Matter (DM)

Extracted Rapeseed meal is say, 90% DM 32.5% CP = 36.11% CP in the DM. (the DM figures in table at the end of this newsletter are slightly different).

This means that Extracted Rapeseed meal is $53.33 \div 36.11 = 67.7\%$ or $\frac{2}{3}$ of the protein of Hi Pro Soya

$\pounds 320 \div \pounds 483 = 66.25\%$ of the price of Hi Pro Soya. On crude protein alone it would have to be $\frac{2}{3}$ of the price of the Hi Pro soya and that would be $\pounds 322.16$ per tonne. But remember The Rapeseed meal is only 12 MJ/Kg DM and Hi pro soya is 13.8 MJ/ Kg DM

This simple analysis shows that even at a current difference of £163 per tonne Extracted Rapeseed meal is not really any better than soya on protein costs.

Note: Optigen on the last page of this newsletter is the best value for money of all!

JJT, 15/06/2020 & 07/06/2022.

Mineral Markets

Fortunately, most of our customers were advised in advance about the spiralling costs of minerals and they got their last orders in before the big jump in prices.

We are fully aware that this could surprise many farmers who are not in close touch with the mineral markets.

If you would like to review your formulations, please give me a call and we can see if there is any room for cost saving.

There are some key things to watch out for though.

- Rumen buffers have risen in price so there is no need to expect too much change now.
- Sodium Bicarbonate availability is good but much dearer.
- 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 and on flush growth pastures!
- Zinc Sulphate is gradually replacing Copper Sulphate in footbaths . It is much safer for sheep and it does as good a job for dairy cows, whilst being much less severe on any damaged tissues.
- Himalayan Pink Rock Salt is back! Albeit more expensive due to greatly inflated freight rates.
- I will take this chance to repeat that 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.
- Even though inflation has increased the cost of mineral supplements substantially, we would caution against cutting back or removing the supplements from the diet. It may well be that all that is needed is some adjustment to the supplement formulation.

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	Late June
De Hulled (Hipro) Soya Ext Meal	483	90	536.67	13.8	38.89	53.33	9.06	30.04	
Argentinian Soya Ext Meal	469	89	526.97	13	40.54	42.4	11.06	33.21	
Lo Pro Soya Ext Meal	0	89	0.00	13	0.00	44	0.00	0.00	
Soypass	695	90	772.22	13.6	56.78	48	14.48	45.33	
NovaPro	417	88.5	471.19	13.1	35.97	34.83	11.97	31.99	delivered
Rapeseed Ext Meal	320	90	355.56	11.8	30.13	36.11	8.86	25.43	
Rapeseed Exp Meal	325	89	365.17	13.2	27.66	35.4	9.18	24.57	
Optigen	2200	99	2222.22	13.2	18.52	275	8.08	22.81	
Dry Wheat Grains	410	90	455.56	13.5	33.74	28	13.40	37.64	
Dry Maize Grains	380	90	422.22	12.7	33.25	34	15.08	40.00	

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.

- **F1 Yeast** has been one of the top national brands of live yeast cultures since 1988 in the UK.

The price will increase in July because Alltech have announced a general increase on all of their products from July 1st. **Now is the time to stock up.** We believe that some competitor yeasts will also increase in price.

The late Dr Pearse Lyons founded Alltech following his research into live yeast cultures in the international yeast collection. He was able to isolate the top twenty rumen active strains and patented the Yeas-acc 1026 strain amongst other promising cultures. This yeast culture was and still is the best of the bunch when it comes down to nutrient release from fibre and rumen buffering. In 2018 we added an activator to the yeast to boost the response and the speed that the rumen microflora can adjust to a start-up application

We have found this approach to be very beneficial to the overall performance of **F1 Yeast** but now we are going one step further by swapping the activator for a new and even better one. Details to follow.

The web link is as follows: - www.lakescot.co.uk/f1-yeast/

- **Richard** is moving on after a further three year stint as my administrator and web designer. This is a great opportunity for him to expand his skill base in a much more diverse setting. We wish him all the best in his career move.

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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