8th Edition 2021

THE DAIRY BLUEPRINT

It's all about the rumen

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THE F1 DAIRY BLUEPRINT

By Jerry Trowbridge

Edited by Richard Trowbridge

8th Edition

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INTRODUCTION TO THE F1 DAIRY BLUEPRINT

The F1 Dairy Blueprint is quite unique; it is the product of the best of dairy farming nutrition and management practise from some of the most successful dairy units in the UK, Europe, New Zealand and North America today.

The blueprint is constantly updated as best practices develop.

Our UK Dairy industry has evolved rapidly since the Second World War, from many low producing dairy herds to comparatively few large very high yielding herds.

Progressive breeding has increased dairy cow lactation yields between three and four-fold since 1947. In terms of evolution this is nothing short of spectacular, however genetic potential improvements come with a price.

As yields increase, other aspects of performance have been shown to be getting worse.

- **Fertility**
- CIS and NMR show that in 2020 UK average calving interval is 400 days. Reducing calving interval by 25 days is worth £115.50 per cow!
- **Feet**
- Average costs are calculated at £113.20 per cow for mild lameness.
- **Udder Condition**
- Mastitis and high cell count accounts for £201 per infected cow. 2020 Average UK Cell count was 173,000 per ml
- **General health**
- It is well accepted that cows will respond better to drug treatments if their immune status is good to start with.
- **Reduced Stress**
- Recent research has revealed how the stress mechanism affects cow health and performance. Simple ways of reducing stress have been shown to yield large dividends.

The F1 Blueprint is a ground-breaking, flexible nutrition management system that is carefully designed to maximise output and profits by aiming to maintain modern dairy cows at the peak of health and efficiency.

F1 PERFORMANCE FEED SUPPLEMENTS

Our **F1 Performance** range is designed to achieve optimum yields and profits, allowing you to use home grown forages & feed crops balanced with the best supplements available to achieve target output:

- Rumen protection products
- Yeasts
- Fats
- Minerals
- Liquid feeds
- Mycotoxin control

Call us for a ration formulation & prices.

TBA Ltd

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E: enquiries@tbagri.co.uk
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WHY SHOULD THIS APPROACH BE BETTER THAN ANYTHING ELSE?

As independent merchants dealing with leading manufacturers, we can select from a much wider resource than that offered by most single companies.

For our part, we will make sure that no corners are cut on product specification because we are passionate that our products will perform to expectation.

To this end we are indebted to our chosen manufacturers for their input to our product development and their technical support for our mission to supply our clients with a product range that is up to the challenge of feeding modern cows to a high standard of production, health fertility and cow welfare.

Their advertisements feature in this F1 Dairy Blueprint and we will welcome any feedback to the content and share any key comment with them.

CHOOSING THE SYSTEM

Whilst researching the F1 Dairy Blueprint we continue to review many systems of management. We have found that whilst most main-stream systems have much in common and provide a useful business model, some of the less popular systems can be very successful.

The F1 Dairy Blueprint is designed to be a safe and proven system to maximise production and animal health. We are aware that the split dry cow choice is not always the system that is selected, but it is without doubt the best option for long-term cow profitability.

This booklet tends to focus on the TMR system for feeding the dairy cow. We also recognise that there are many variations of this system. The semi TMR systems used where robotic milking machines and parlour feeders are used, buffer feeds to grass systems and zero grazing systems all need to present the cow with a balanced daily nutrient intake. This can only really be comprehensively achieved by making sure that the forage-based fraction of the diet is balanced with other feeds that are normally trough fed.

Have a look at this F1 Dairy Blueprint with an open mind it has been designed in a way that we can adapt to most farm systems. Ultimately you can still reap the benefits even if you don't adopt it as fully as we have described it here.

IT'S ALL ABOUT PERFORMANCE

The F1 range of supplements is carefully formulated to the highest quality and specification.

We put performance, health and welfare first because we know that you need long-term profitability.

- **Yeasts**
- **Fats**
- **Minerals**
- **Omega 3's**
- **Liquid Feeds**
- **Mycotoxin Control**
- **Rumen Protected Products**

Call us for prices and rationing

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RUMINANT NUTRITION

I would urge anyone who reads this blueprint to have a look at our websites www.lakescot.co.uk and www.tbagri.co.uk. The lakescot website has a large section on the science of ruminant nutrition and we have done our best to explain it using as little jargon as possible. As such it is a useful document for beginners and students who wish to get a basic understanding of our science.

There are a couple of concepts that we should try and understand:

- **The gut is basically a long tube with large bubbles (organs) which opens and finishes in the outside world. Everything that is on the inside of the tube is therefore not part of the animal's body. The function of this tube and its associate organs is to extract useful nutrients from the foodstuffs within and get rid of the useless leftovers. Unlike animals with one true stomach (humans and pigs for example), the ruminant has four stomachs! The first three are the Reticulum, the Rumen, and the Omasum. These three stomachs are all connected and form a natural fermentation vat.**

- The fact that fermentation happens here is the result of millions of years of evolution. The cow evolved to extract nutrients from vegetation and this is not efficient for single stomached animals. If the vegetation is fermented by bacteria and other microbes and fungi, the nutrients are released and some are absorbed by the cow, some are used by the rumen bugs for reproducing more bugs and others pass through to the last stomach, the Abomasum. The net result is that the fourth stomach receives about 2Kg per day of rumen bugs themselves which comprise the best high-quality foodstuff that the animal digests in its fourth stomach and all of the intestines that follow on down the tube.

- **The F1 Dairy Blueprint recognises the importance of keeping this system running at peak efficiency because whilst our modern cows are much more productive than their ancestors, they still rely on optimum rumen output.**

PRODUCTS

Why do we need another range of supplements?

When Trevor Birchall and Jerry Trowbridge did their initial research in North America and Europe, they found that whilst many of the management systems were highly tuned. In most cases the attention to detail that was evident in the nutrition of the cows, was not reflected by the feed companies in the UK at that time and: still tends to be compromised by most UK feed companies today who prefer to offer cut price cut down specifications to pursue their commercial drive for sales turnover!

Today, more of the major UK supplement companies are investing in better formulations to include ingredients that are able to ensure better animal health as well as production.

We feel that if the modern dairy can manage cows for high output and good health, welfare and ultimately longevity, this should become the target of the efficient UK dairy enterprise. Optimum profitability also follows in the wake of this aim.

Most farmers who have opted for grass-based milk production, have recognised that they need a type of cow more suited for grazing than the typical Holstein. The drive is for a more robust breed and there seems to be no clear choice at present.

In America it was true that certain feed stuffs that would be banned in Europe were being used in a few cases but, when we looked closer most of the units were using feeds that we could replicate fairly easily in most of the UK.

The key area of difference was their attention to detail for dry cow feeding and management.

The Minnesota State University Vet School facility at New Sweden Dairy was able to show amazing success at feeding close up dry cows and fresh cows in such a way that they could go on to produce high yields (10,000 litres + for Jersey cows!) and still retain a calving index around 400 days.

Current research projects at Minnesota State University Vet School have looked at how stockmanship and daily exercise routines can improve motility and subsequent post calving performance. This “keep fit” routine for dry cows has proved to have tangible benefits.

The products referred to throughout this publication represent the same no corners cut approach that we came across on all of the high output units. Only fully specified products can deliver on the claims made for their performance.

Our products are continually reviewed and modified as our information and technology improves.

New products are being added when research highlights ways of improving nutrition to aid health and productivity. A good example of this is F1 Bio Hoof which is a valuable addition to the routine control of Digital Dermatitis and foot problems.

We have worked closely with our manufacturers to formulate the supplements which in some cases, has meant sourcing certain nutrient sources that are new to the UK feed industry.

We hope that you will be able to select the products that fit in with your system.

If you need to make contact, we offer a full support and back up service for all clients who wish to take advantage of the F1 Dairy Blueprint. (See back the page of this booklet for contact details.)

HOW DOES THE F1 DAIRY BLUEPRINT WORK?

This brochure will take you through the lactation cycle of the modern dairy cow. We will detail the key management priorities, the best practise management systems and the products you will need to bring it all together through the key stages of lactation.

- **Last 8 weeks of lactation**
- **Far off dry period and close up dry period**
- **Calving**
- **Freshers (first 21 days of lactation)**
- **Early lactation (21 days to 120 days)**
- **Mid lactation 121 days to last 8 weeks of lactation**

LAST 8 WEEKS OF LACTATION

MANAGEMENT PRIORITIES

This stage of lactation should be reserved for managing cow condition.

In the event that the cow is in the correct condition at this stage there is generally no need for her to enter a conditioning group.

The target at drying off should be 2.75 to 3.25 for a typical Holstein. Perhaps up to 3.5 for an old fashioned Ayrshire or British Friesian.

Thin cows should be given the opportunity to gain weight. This can be simply achieved by cutting dietary protein supply whilst maintaining energy at a good level.

Fat cows should be allowed to lose weight. This can be done by reducing energy supply and maintaining around 17% to 18% crude protein in the diet.

Turning late lactation cows out in spring results in a general over supply of nutrients and they will tend to gain too much weight. Spring grazing therefore should be restricted to these cows.

The diets can be manipulated to cater for the average cows in the group.

Ideally, extreme cows should be singled out and managed separately.

KEY PRODUCTS

Note: All F1 branded products are fully specified original formulas, and remain the intellectual property of TBA and Lakeland-Scottish.

- **F1 TMR Dairy Mineral typically fed at 125 grams per cow per day to maintain immune status, cell count, hoof condition and maintenance.**
- Good quality Limestone Flour where needed to prevent excess losses from skeletal reserves.
- **F1 Absolute Grazing & Fertility Mineral Buckets. Typically for use when late lactation cows are left on restricted grazing.**

THE DRY COW

MANAGEMENT PRIORITIES

Management of the dry cow is recognised as being the key driver to the success or failure of the subsequent lactation. It should be viewed as a time when the foundations for the next 9 or 10 months of production need to be laid down.

Getting this right will have a significant effect on production, health and fertility

Put simply “It’s a full service and an MOT ready for the next year’s work”!

The key task at the far off stage is to maintain cow condition at around 3.

This is not as easy as it sounds, since the cow’s intake of energy is usually much greater than it needs to be at the start of the dry period.

Dry cow intakes should therefore be limited to what supplies their energy requirements for maintenance and those of the growing foetus.

Dry cow diets featuring large intakes of straw or lower energy whole crop are excellent. They are both bulky (helping to keep the rumen big) and low in potassium (the main predisposing cause of milk fever).

During this period the foetus is getting bigger and the rumen is being squashed into a smaller space.

There is a key requirement to keep the rumen as big as possible at this stage. This helps to promote a rapid increase in appetite (lift) and also helps to avoid the chance of a displaced abomasum at the start of the lactation. We recommend a minimum intake of 6000 grams of NDF and 1200 to 1300 grams of metabolisable protein throughout the whole dry period.

As the dry cow nears her calving date, her requirement for energy starts to rapidly increase just as her intake starts to decrease. This is the key reason for having a separate close up (or transition) group.

There is much debate about what feed regime makes the best system for dry cows. There are three systems currently being used:

◊ Single dry cow group.

Dry cow intakes vary from drying off right up to calving, when it drops off rapidly. As a result this system gives poor control of cow condition.

◊ Short dry period.

Modern dairy cows can produce high yields even into late lactation. Some farmers believe that there is an advantage to continue milking the cow until 4 weeks before calving. There is still much debate about this system, since it is widely believed that lactations are more productive following a typical 7 to 8 week dry period.

◊ The split feeding system.

Currently, over three quarters of North American dairy farmers use this system. The F1 Blueprint recommends the same management principles be applied here in the UK. The system broadly consists of a 5 week “Far Off” group and a 3 week “Close Up” group. This allows for much better control of health, condition and calving success.

FAR OFF DRY COWS

These cows should have been dried off in the correct condition score of 3. This will allow for an increase to about 3.25 at calving.

Condition of cows that missed service and have an extended lactation is best adjusted in a late lactation conditioning group and not after they are dried off. Most UK dairy farms are un-able to accommodate this approach but the principle of managing cows for condition in late lactation should be a management goal.

The main objective is to make sure that the rumen space is kept as large as possible by feeding plenty of low energy bulky forages in order to prevent the animal from getting fat and losing rumen fill capacity.

At this far off stage calcium can and should still be fed. The DCAD approach only applies in the close up period.

Good clean wheat straw chopped to about 4 cm (muzzle width) and fed along with silage, whole crop and or maize silage should form the bulk of the ration. The target dry matter of the ration should be around 45% this will give good intakes of bulk and keep the rumen big.

Nutritionists should note that the total energy requirement of the far off dry cow is only around 8 to 9 MJ/Kg DM, hence the need for low energy bulky forage.

Dr Jim Drackley (professor of Animal Sciences university of Illinois.) recommends limited energy intakes to the animal’s theoretical requirement at this stage. He recommends a high straw intake strategy for far off dry cows and only moves to a more nutrient dense diet when the cow enters the close up phase. This gives much better post calving responses.

KEY PRODUCTS

◊ F1 Dry Cow Build Up Mineral

This mineral supplement contains all of the trace elements needed to prepare the cow, calf and colostrum for calving. It is a very highly specified mineral which features the full recommended dose of Availa® protected trace elements, Sel-Plex, Biotin, and plenty of Vitamin E alongside a balanced major element formulation.

The mineral has been spiced for use in TMR mixes but it has also been prepared for free access where it has to be trough fed.

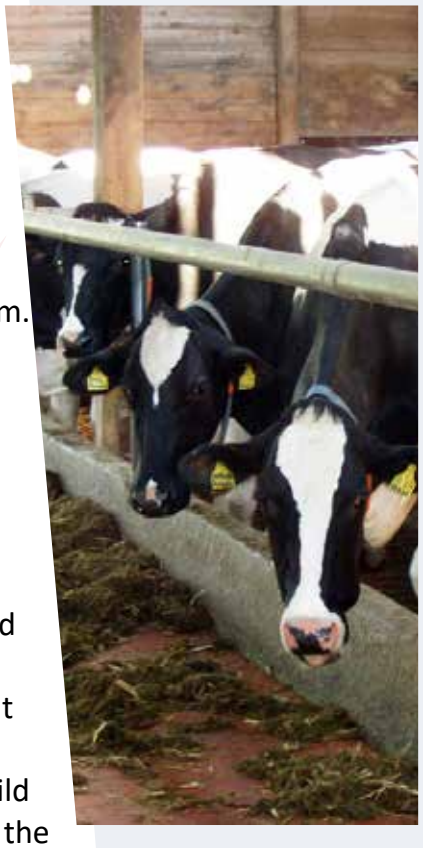
Optomega Plus Recommended at 120 Grams

See below

◊ F1 Absolute Dry Cow Mineral Buckets

Typically fed at 1 bucket per 10 cows every 10 days.

Carefully balanced to provide enough mineral supplementation to dry cows where trough feeding is not available.



◊ Extra Magnesium Chloride.

(50 grams to 150 grams) In situations where the diet is high in Potassium, Magnesium chloride will help to counter the effects of clinical and sub-clinical Milk Fever. Magnesium Chloride has a low DCAD value of -16’160 (MEQ/kgDM).

Note autumn grass, molasses and pot ale syrup are usually high in Potassium.

◊ F1 Yeast

To maintain a healthy rumen microbe population.

◊ Limestone Flour

Contrary to belief, we know that at the end of lactation many cows have had some time when calcium has been under supplied. This has the effect of reducing the cow’s reserves from its bone and cartilage structure. The result is an open sponge structure to the bone and a much greater chance of milk fever. Inclusion in the far off group diet is very useful because it helps to build a reserve. Limestone flour is calcium carbonate and as such does not affect the DCAD in the far off stage!

There is no point in using limestone flour or any other calcium source if you are feeding calcium binders in the close up stage like X-Zelit®. We would only advise X-Zelit® in the close up group.

◊ Extra Calcium Chloride

(50 grams to 150 grams) Very popular in some parts of Europe and North America, this mineral will supply calcium at a very low DCAD value of -18’113 (MEQ/kgDM) making it a great choice for Close Up dry cows that will need calcium at calving to promote muscle movement and colostrum production with the huge bonus of reducing the Milk Fever threat.

Calcium Chloride is first choice for Close Up cows when Limestone flour should not be fed (unless a calcium binder is used (see above)). Seek nutritional advice to balance the DCAD levels in the Close Up diet.

CLOSE UP CALVING

MANAGEMENT PRIORITIES

This close up period is critical in determining the success of both calving itself and the coming lactation. The main priorities of nutrition are to avoid the symptoms of both clinical and sub-clinical milk fever and to ensure liver function is at peak efficiency.

We should also not lose sight of the fundamental need to encourage maximum appetite and rumen fill pre and post calving in order to minimise negative energy balance and its consequences post calving. This should be encouraged by managing a smooth transition and using appetite aids like yeast, flavours, and (salt post calving).

Avoiding stress on the cow at this stage of her cycle is a key consideration. Cows should be allowed generous space allocation we now think that at least 30 inches (76 cm) of feed trough space and 150 square feet (13.5square metres) of bedding space or a maximum 95% cubicle stocking rate.

Inflammation is another risk factor. When a cow calves there is a great deal of muscular action and after the calf has been born many of the muscles and the membranes in the birth canal are often damaged or stretched. We know that the faster the animal heals and recovers from the strains of giving birth the faster she returns to normal eating and production. Post calving recovery in a secure and spacious pen is to be encouraged . We also know that certain nutrients will promote faster healing and better colostrum quality when fed in the close-up diet.

Milk Fever (Hypocalcaemia)

There are two schools of thought on the prevention of milk fever. The DCAD approach and the non DCAD approach.

If you cannot control the DCAD elements of the diet by housing the close up cows on a calculated ration, they have to be fed on grass.

The potassium and sodium levels in grass frequently predispose milk fever. The use of 500 grams of X-Zelit® (other calcium binders can be used) in this situation is probably the best option. (See below).

THE DCAD APPROACH

1. The DCAD approach outlined below, effectively ensures that the calcium reserve needed at calving is fit for purpose and that the Cation-Anion (DCAD) challenge is addressed by the use of magnesium chloride and other anionic agents.
2. Dietary cation-anion difference, or DCAD, is a measure you should be using in both dry and lactating cows. In close-up dry cows, a negative DCAD can help prevent metabolic problems and in lactating cows, a positive DCAD can help increase milk production and milk components. The most common equation to determine DCAD is based on the dietary concentration of the cation minerals sodium (Na) and potassium (K), and the anion minerals chloride (Cl) and sulphur (S). The DCAD formula is as follows:
3. This is the complicated bit but to be honest we just let the software do all the sums and get on with life!
   DCAD meq (milli-equivalents)/100g (grams) dietary DM = [(%Na × 43.5 + %K × 25.6) − (%Cl × 28.2 + %S × 62.5)] (Mineral % are on a dry matter (DM) basis).
4. Target DCAD for close up dry cows should be around minus 80.
5. Target DCAD for lactating cows should be around 350 to 400.
   The practice of keeping close up dry cows outside on tightly grazed (exercise) paddocks is not the best way of preparing the cow for her next lactation. The variables of grass quality, intake, mineral composition and weather mean that we cannot control the diet. In this situation the X-Zelit® approach is more practical.

Housing these cows on a straw based diet is a far more effective way of allowing the cow to calve down where help can be given more easily if needed and start the lactation without a check.

We recommend a minimum space of 13.5 square metres per cow though more is preferable.

Stress reduction is hugely important so good housing environment with at least 30 inches (750cm) trough space per animal is recommended. Some experts suggest 1 metre is better.

The focus of recent nutrition research places much emphasis on maximising rumen space right up to calving. This is now known to have a very significant effect on post calving appetite and as such links in with the argument that high post calving intakes reduce the issues of condition loss and negative energy balance and gives a very positive response to fertility and improved pregnancy rates.

So, you can now see why the F1 dry cow products have to be designed to manage the critical close up and fresh cow periods so effectively.

The key tasks are as follows:

Maintain a physically large rumen by feeding a lot of clean straw. This will help to avoid displaced abomasums after calving by allowing the unravelling squashed rumen to fill the space left in the body cavity by the calf more rapidly.

Restrict high in potassium forages to 3 or 4 kilograms of dry matter.

Feed a target of 1200 to 1300 grams of metabolisable protein dry matter.

Where the post calving diet is a TMR, feed 3 or 4 kilograms DM (9 to 12 Kg fresh weight) of this, but make sure the production minerals and any limestone are not included unless you are following an X-Zelit® (calcium blocking) regime or you can compensate the positive DCAD of the production diet.

Feeding yeast helps with microbe population efficiency and transition from the dry cow diet to the production diet. We should not underestimate the advantage it provides in this role!

As the time for calving approaches intake levels drop to around 1% of body weight, just at a time when the cows requirements for energy are at the peak for the foetus and the act of calving itself. Some of the “close up” calving supplements now include valuable energy precursors in order to alleviate the problems brought about by naturally low energy intakes at this time.

Note: protected fats are not recommended at this stage of the cow’s cycle.

Improvements in intake at this stage can have very beneficial effects.

Penn State University has found that including higher levels of clean and sweet high-quality fibre from both forages and concentrates can greatly assist this objective. Work to a target of 6 Kg minimum NDF. This figure is also the target for the fresh calved cow because it will reflect the optimum intake and appetite that the cow needs to achieve if she is to follow a high yield lactation curve.

The University of British Columbia has concluded that a 1 kilo reduction in dry matter intake at this stage can double the risk of sub-clinical ketosis, and cows were three times more likely to have hung cleansings. One key and pretty obvious piece of advice is that to maximise intakes, the close-up dry cows should be presented with fresh food at the trough and this usually means feeding more than once per day!

CLEAN WATER

Current research shows that cows that are stressed are much more likely to succumb to disease challenges. This includes metabolic diseases as well as infectious diseases. Water intakes tend to drop in the few days before calving and this has been shown to put more stress on the cow.

Stress free hydration at this stage is very beneficial because it reduces the opportunity for infection. Clean water is essential for these cows.

The minimum temperature of drinking water should not be less than 4°C because this will result in low intakes and reduced appetite at a time when the cow needs to achieve her target nutrient demand. Conversely the maximum temperature recommendations vary from 20°C to 12°C these are less critical but indicate that the cow prefers cool clean water.

Work is being done to see what can be used to stimulate extra water intake during this period. We already know that some products can be used to sterilise the water supply, but this on its own is not effective enough. Clean troughs are essential and pretty obvious when you think about it.

KEY PRODUCTS

◊ F1 Yeast. Recommended @ 25 to 50 grams

Acclaimed as a “most trusted” brand in the UK, it is a highly concentrated dose of a live yeast supplement for optimum rumen conditioning both before and after calving. F1 thermally stable yeast is carefully prepared to ensure that the active yeast is presented to the cow undamaged by the carrier mixing process and has maximum effect in the rumen.

F1 Yeast has been proven to increase production and buffer rumen pH. There are many extra benefits shown to result from the use of F1 yeast. Improvements in stress reduction, fertility, feet, milk quality and condition can all be associated with the use of this product.

Using F1 Yeast as a changeover agent is a great technique for stabilising rumen microbe populations as the diet changes from the dry cow diet to the fresh calved diet. This is without doubt one of the key ways to increase post calving appetite.

The current 2021 version includes an activator which enlivens the yeast and further improves the benefits resulting from its use.

◊ FiMLAC Dry Cow Rolls (North), TBA Specialist Transition Rolls (South). Recommended 2-3Kg.

These compound dry cow rolls have been formulated to include all of the key nutrients in a 2 or 3kg dose of rolls. They are semi DCAD formulations which will need little DCAD help with Magnesium Chloride if the forages are high risk.

◊ Reashure®-XC Recommended at 30 grams

◊ Optomega Plus Recommended at 120 Grams

Optomega Plus is a powdered supplement based on totally natural fish oil, rich in essential fatty acids EPA (Eicosapentaenoic Acid) & DHA (Docosahexaenoic Acid).

Feeding these essential oils from the point of ovulation and throughout her conception helps to ensure a successful pregnancy. Optomega Plus is a rich source of both EPA and DHA which are the two essential fatty acids that can only be supplied by nutrition. These two essential fatty acids have been shown to regulate and suppress the PGF2α hormone (Prostaglandin F2). This has direct implication in improving the conception rate.

EPA and DHA both lower inflammation of membrane tissues throughout the cow's body. All benefits are derived from this prime function.

Optomega Plus is beneficial to your milk's omega 6:3 ratio, meaning that the quality of your milk will improve. Having a higher proportion of omega 3 in your milk implies that the milk is healthier for human consumption.

Optomega Plus is supplied in foil-lined bags to ensure freshness and we use specially selected carriers so that Optomega Plus remains free-flowing and easy to use.

◊ F1 Elevator Recommended. 250 to 300ml

This product is a blend of Glycerol and Monopropylene Glycol with a unique flavour added. It will provide a significant dose of energy just when the cow needs it. F1 Elevator also has a major effect on optimising appetite during this critical part of the dairy cow cycle.

This is probably one of the most underestimated yet effective products we have ever brought to market.

◊ F1 Dry Cow Build Up Mineral. Recommended 150 grams

This mineral supplement contains all of the trace elements needed to prepare the cow, calf and colostrum for calving. It is a very highly specified mineral which features the full recommended dose of Availa® protected trace elements including Availa Selenium, biotin, and plenty of vitamin E alongside a balanced major element formulation.

◊ X-Zelit® Granular or Compound Pellets (with or without minerals)

Recommended 500 grams Granular 2.5 Kg without minerals 3.0 Kg with minerals

This product has some remarkable abilities to eliminate milk fever and increase appetite. Based on Sodium Aluminium Silicate, this synthetic Zeolite clay binds calcium very efficiently indeed. This action effectively activates the cow's hormone system so that she is ready to absorb calcium efficiently from the moment of calving.

This should reduce the incidence of milk fever and in a big Danish trial over 22 herds reduced milk fever incidence by 86%. Grass fed dry cows should be buffer fed in any case and this is a great situation for this type of approach. (Use when the choice is not to feed supplemental calcium).

(Not for use with DCAD systems).

◊ F1 Ignition. Recommended 1Kg

Re-hydration therapy for fresh calved cows. (see below)

◊ Magnesium Chloride & Calcium Chloride.

Recommended Zero to 150 grams variable rate each. Seek advice.

For use where there is a severe potassium challenge as a DCAD agent. Magnesium chloride can be used alongside Calcium Chloride to greater effect in many Close-Up diets.

x zelit®

UNCOMPLICATED EXCELLENCE...

500,000+

dry cows and newly-calved cows with superior starting conditions...
...and still counting

Scan the code to see the video...

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LIVER FUNCTION

The close-up dry period and preferably the fresh period of the lactation cycle offers farmers the opportunity to manage the cow's liver. The relatively short time span allows a cost-effective use of some very specialised feed supplementation that is very well proven to clean up and reinvigorate this vital organ ready for efficient function in the next lactation period. The benefits of this procedure are wide ranging for production health and fertility.

The liver is a fantastic organ; it has a fundamental role in processing the following nutrients:

Fats, Sugars, Starches, Fibres, and Proteins.

So, it's pretty vital then! The liver's main role is transforming energy from these nutrients into a form where it can be moved around the body to all the sites where it is needed.

It is also responsible for the synthesis of non-essential amino acids and getting rid of excess ammonia by detoxifying into urea.

There are three key liver management techniques that should be considered with regard to improving liver performance.

- **Livers can be compromised by the deposit of copper on the tissues from the blood stream. This only occurs as a gradual build up over time and is a complex biochemical accumulation. Copper toxicity is complex and normally a sub-clinical condition. The EU recommended maximum dietary concentration is 34 mg / kg DM. The UK recommended maximum is 20 mg/ cow /day, but the requirement is somewhere between 11 and 15mg / kg DM per cow per day. These figures are frequently exceeded, and this has a negative effect on intakes and fertility. Copper management should start from day one of the animals life since we often find that when heifers calve for the first time they are already suffering the effects of sub-clinical copper overload!**

- The liver can be stimulated by supplying the cow with a "Hit", or extra single feed of rapidly absorbed sugar or sugar analogues which will flood the liver at a single point during the day. The liver has to work at peak efficiency to deal with this. Trials have revealed the improvement in the liver function when we use @300ml of say Monopropylene Glycol once a day for say 3 weeks with an enhanced response if this is continued for another three weeks.

- **Treating the liver with 15 grams (active) of well protected Choline will actively serve to mobilise fat deposits that are effectively "clogging up" and preventing a degree of lipolysis in the liver.**

◊ F1 Elevator

This product is used in the close-up diet to trigger liver function, it is a blend of Glycerol and Monopropylene Glycol with a unique flavour added. It will provide a significant dose of energy just when the cow needs it. F1 Elevator also has a major effect on optimising appetite during this critical part of the dairy cow cycle.

Feeding F1 Elevator is recommended only as a top dress product added (usually via a watering can). The reason for this is that by exposing the digestive system to a significant dose of this very highly available energy source, the liver will be stimulated into a more vigorous response than the normal TMR would provide.

In simple terms "It is a kind of kick start"! This technique helps to improve the effectiveness with which the liver functions in general and the net result is a general improvement in energy metabolism.

We have looked carefully at the blood chemistry around calving and the beneficial effect of this approach can be checked quite easily using this technique.

The mode of action of F1 Elevator is entirely different from that of ReaShure below. Both products can be used together for improved effect.

◊ ReaShure®-XC Feed at 30 grams

ReaShure®-XC Rumen protected choline fed at 30 grams per cow per day for 21 days close up and 21 days post calving if possible (but not essential). Delivering 15 grams active choline (the full dose)!

Put simply, it enables the cow to process NEFA positively (for energy and milk), rather than negatively (ketone bodies and fat) which would result in ketosis and/or fatty liver.

Rumen protection is critical to ensure that the choline is not being degraded by the rumen and the cow receives the dose that she requires.

ReaShure®-XC is a highly effective rumen protected choline. It's cutting-edge rumen protection technology ensures that the cow gets exactly what she needs further down the digestive tract.

All cows at calving will enter a period of "negative energy balance" (NEB) where the energy supply cannot meet demand.

During this "transition" period, NEFA (free fatty acids) are mobilised from her back and taken up by the liver, and it is how she responds to this challenge that determines the success or otherwise of her transition into lactation.

As lactation begins, choline requirements rapidly increase to ensure that these NEFA are processed and packaged in a positive way as VLDLs (Very Low-Density Lipoproteins).

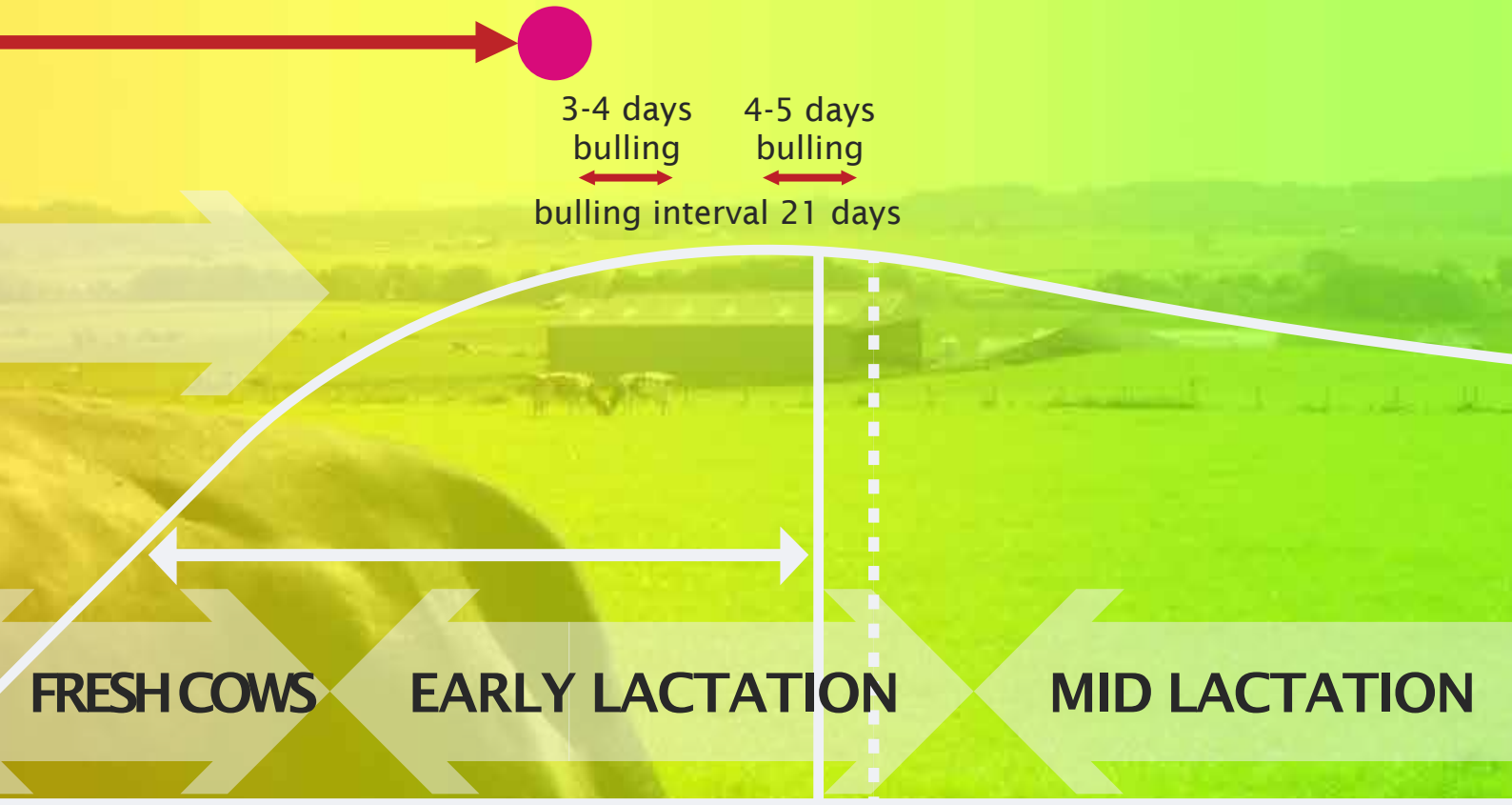
However, the majority of dairy cows are deficient in choline at transition because most of dietary choline is degraded by the rumen microorganisms and her body can't make enough to meet requirements. This makes the cow more prone to suffer from fatty liver syndrome or even full-blown ketosis. Even at sub-acute levels, this will have significant knock-on implications for the cow's health, milk yield and milk quality throughout her lactation. Ultimately there is a consequent negative impact on profitability.

Folicle Development 70 - 90 days

Calving (day 0)

TRANSITION

	LATE LACTATION	FAR OFF DRY PERIOD	CLOSE UP DRY PERIOD
Diet & Management	Manage condition score to dry off at CS 3.	"Bulky" low energy density ration to ensure rumen kept large, target 6KG NDF. BCS of 2.5 - 3 maintained.	Bulky ration for rumen fill (straw based), target 6KG NDF. Incorporate similar components to lactation diet for rumen adjustment and stable microbe population. Restricted "green" forages. High magnesium, zero calcium, unless calcium chloride.
TMR Products	Optomega Plus F1 Super Fat F1 Molasses F1 Yeast Mycosorb A+ Toxfin XL Dry F1 TMR Dairy Mineral Limestone Flour Acid Buf	Optomega Plus F1 Dry Cow Build Up Mineral Dry Cow Rolls F1 Yeast Mycosorb A+ Toxfin XL Dry F1 Absolute Dry Magnesium Chloride Acid Buf	Optomega Plus Dry Cow Rolls F1 Elevator ReaShure F1 Novatan F1 Yeast Mycosorb A+ Toxfin XL Dry F1 Dry Cow Build Up Mineral Magnesium Chloride Acid Buf



FRESH COWS

Create a "Fresh Cow" group to boost rapid dry matter intakes and address N.E.B.

Provide a low-stress environment to encourage good forage intakes for rumen fill.

Adopt nutritional solutions to aid metabolism and fertility.

F1 Ignition
Optomega Plus
F1 Elevator
F1 Molasses
F1 Yeast
F1 Novatan
Mycosorb A+
Toxfin XL Dry
F1 TMR Dairy Mineral
Magnesium Chloride
Acid Buf

EARLY LACTATION

84 90 days from calving

Maintain a high density diet.

Good rumen health.

Help cows cope with negative energy balance.

Continue feed focus on fertility.

Optomega Plus
F1 Super Fat
F1 Molasses
F1 Yeast
F1 Novatan
Mycosorb A+
Toxfin XL Dry

F1 TMR Dairy Mineral
Magnesium Chloride
Acid Buf

MID LACTATION

Maintain diet density at least until cow is confirmed in calf.

F1 Super Fat
F1 Molasses
F1 Yeast
F1 Novatan
Mycosorb A+
Toxfin XL Dry

F1 TMR Dairy Mineral
Magnesium Chloride
Acid Buf

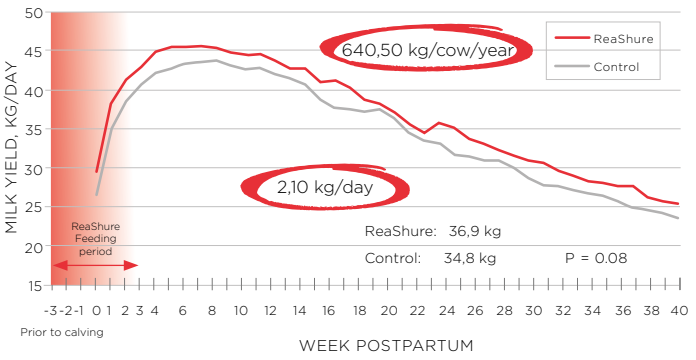
ReaShure®-XC

Precision Release Choline

Combining advanced core technology and industry-leading encapsulation, ReaShure-XC is the most researched, beneficial, cost-effective, and concentrated form of rumen-protected choline on the market today. Most dairy cows are deficient in choline at transition because most of dietary choline is degraded by the rumen microorganisms and her body can't make enough to meet requirements. Choline is essential for the growth and health of all animals and it is required to help the liver process and metabolise fat. A healthy and properly functioning liver can help cows transition more smoothly, creating a faster and more productive start to their lactation.

- ✓ **Average increase 2.1kg/day milk yield across the full lactation**
- ✓ **Increase in milk constituent yield**
- ✓ **Improved fertility**
- ✓ **Reduction in ketosis and fatty liver**
- ✓ **Reduction in metritis and metabolic Issues**
- ✓ **Improved colostrum quality**
- ✓ **Better heifer growth rates**
- ✓ **Reduction in subclinical hypocalcaemia**
- ✓ **Reduced calf mortality**

EFFECT OF FEEDING REASHURE®*PRECISION RELEASE CHOLINE* DURING TRANSITION ON MILK PRODUCTION OVER 40 WEEKS



Zenobi, et al. *J Dairy Sci.* 101:1088 (2018).

2,10kg of milk per day which results in **640,50kg** more milk per cow over a 305-day lactation!

ABVista

Lakeland Scottish Feeds & Services

TBA

Lakeland Scottish and TBA are trusted suppliers of Reashure XC from AB Vista

WHY PROTECTED CHOLINE?

Choline facilitates the export of fat from the liver to the mammary gland where it is used to make milk. It also supports the metabolism of NEFA to energy for use by the cow to maintain body condition.

Put simply, it enables the cow to process NEFA positively (for energy and milk), rather than negatively (ketone bodies and fat) which would result in ketosis and/or fatty liver.

Rumen protection is critical to ensure that the choline is not being degraded by the rumen and the cow receives the dose that she requires.

Reashure®-XC is a highly effective rumen protected choline. It's cutting-edge rumen protection technology ensures that the cow gets exactly what she needs further down the digestive tract.

Many supplements do not contain the full recommended dose of Choline at 15 grams (Pure Choline). At Lakeland-Scottish Feeds & Services we have decided to promote this product because the trial data and farmer experience is so positive and the 31-peer reviewed published trials give 99% reliability!

LF TRANSITION

Sometimes as an alternative strategy to a full dose of protected choline, there is a school of thought that recommends that we use a combination product like LF Transition.

This product features the use of protected methionine along side protected choline, but in a reduced dose format.

The complex approach of using protected methionine in addition to choline, niacin and vitamin B12, can provide a similar effect to using a full dose of choline in it's own. Some would say this is a better option. Our experience is that both techinques can work well, and are better than no action at all.

TURNING DRY COWS INTO TRANSITION CHAMPIONS...

Sign up for a TMS evaluation and get:

- Independent cow assessments
- Identifying transition issues & impact on milk yield
- Highlighting problem cows
- Follow-up report

Talk to us to find out more.

TMS & LF TRANSITION IS SUPPLIED BY:

TBA Ltd
T: +44 (0)1300 345711
E: enquiries@tbagri.co.uk

T: +44 (0)1768 899513
E: jerry@lakelandscottish.co.uk

EVERYTHING SHE NEEDS TO AVOID KETOSIS

- Contains protected amino acids & vitamins to help enhance liver function
- Supports appetite & milk yield
- Aids improved fertiility

If ketosis is an issue on your unit, talk to us to find out more.

PREMIER
NUTRITION

CALVING

MANAGEMENT PRIORITIES.

The point of calving is obviously the major event in the cow's cycle. We recommend that the cow is quietly separated from her group into her own spacious clean calving box, with plenty of straw. Some units work successfully with large group calving pens but hygiene routines have to be rigorous if environmental disease challenges are to be kept within reasonable limits.

It is important to allow the cow some quiet time to find her most comfortable position. (Usually backed up against a wall!)

She will require a large expenditure of energy for her labour and to expel the calf and the afterbirth.

It is useful to have all of the necessary aids ready to hand in case they are needed. Also a post calving drench preparation is recommended in order to re-inflate the rumen and avoid a displaced abomasum.

Increasing the capacity of the rumen by up to 40 litres at this stage has some very impressive long-term benefits. Effectively, a large intake of fluid will create a big appetite right from the start of her lactation. This reduces negative energy balance (NEB), and gives a more rapid uplift of milk yield and a significant fertility response later on in the lactation. F1 Ignition is ideal for this purpose.

KEY PRODUCTS

- **The F1 Dairy Blueprint recommends F1 Ignition as a voluntary drink of around 20 to 40 litres or as a drench of around 35 litres. This mix of electrolytes, soluble calcium, pro-biotics and ready energy will help to get the cow back on her feet, licking the calf and get her ready for her first big meal.**

- **See also our new Birth to Calving Blueprint at www.lakescot.co.uk or request a hard copy by post.**

f1 IGNITION

HYDRATION THERAPY to aid recovery for fresh and downer cows.

Product Features

- Highly palatable
- High energy
- Protected choline
- Highly soluble calcium
- Vitamin complex
- Large dose of F1 Yeast
- 15 KG buckets and 1 KG sachets

Product Benefits

- Active rumen expansion
- Energizing formula
- Rapid recovery post calving
- Improved TMR intakes
- Ultimate fertility responses
- Rapid return of full appetite
- Helps prevent symptoms of milk fever

TBA

Lakeland-Scottish
Feeds & Services

lakescot.co.uk/f1-ignition
tbagri.co.uk/f1-ignition

OPTION 1 FRESHERS (EARLY LACTATION FIRST 21 DAYS)

MANAGEMENT PRIORITIES.

"It is usually about now that the key reason for managing cow condition between 2.75 and 3.25 becomes apparent".

Low appetite just after calving results in excess mobilization of body fat. This is usually the case If the cows calve down too fat (condition score 3.5 plus), although postmortem examinations have shown that it is not only fat cows that have fatty livers.

When the liver is clogged up with fat, the animal's ability to mobilize energy is significantly impaired. In extreme cases the animal shows clinical signs of Ketosis. Hence condition management should be one of the key functions of the whole system.

The routine uses of ReaShure® helps to clear the liver of fat in the close-up period but there is an extra benefit if it continues to be fed during the Fresher phase.

The Freshers group gives the manager a chance to ease the cow into a productive lactation. The key management objectives of this group are listed below.

- **Maximise feed intakes.**
- Elevate the milk yield.
- **Prepare the cow for her next service.**
- Optimise the health of the developing egg.

Having a Freshers group is becoming an accepted management technique within the UK. Minnesota State University Vet school, practice this technique as standard.

This is how it works:

The freshly calved cow is separated from her calf within a few minutes of calving. She is drenched and milked for colostrum, which is then bottle fed or tubed into the calf. Snatch calving is becoming a vital tool in the war against Johnes disease.

1. Calves that are removed as soon as they calve stand much less chance of contracting the Johnes disease via faecal contamination. There is also some evidence that the dams are much less stressed.

2. The cow then enters into a group of cows that are all in the first 21 days of lactation. They are probably from the same close up dry cow group that she has just left, and they will be given lots of trough space and a low stocking density (at least 10 square metres per cow.) The key to success is to focus on a rapid increase in intakes.

3. The main objective in this group is to get intakes off to a really good start. The ration is balanced to an optimum palatability, physical structure and dry matter as well as standard high density nutrient balance. Some recent work has shown that by mixing up to 30% of the close up diet with the fresher diet can work well at this stage by not encouraging the cow to achieve a too rapid rise in milk yield at the start of her lactation. Target at least 6 Kg of NDF. The dry matter of the diet is a subject of much debate. The advocates of compact feeding (target @ 38% dry matter in the TMR by adding water to the concentrates overnight and mixing with the forages the following day); can achieve impressive dry matter intakes. I have seen that if a drier TMR is presented, the intakes can still be impressive provided there is easy access to plentiful clean water.

4. The next objective is to settle the cow down into the routine of the cubicle house and the milking regime. Introduction to robots needs to be vigilant until the cow or heifer gets into the routine.

5. Every effort is made to maximize cow comfort, easy trough space with no competition at the barrier. Around 750mm to 1metre per cow is advised for this group.

6. Feed troughs should be cleaned at least 3 times a week. This avoids build-up of mouldy and contaminated feed and helps intakes.

7. Feed should be on offer at all times. Cows should be allowed to refuse some of the feed especially if some of it is of poor quality.

In most cases the TMR diet is essentially the same as the one fed to the main lactating group with one major exception, the need to minimise the time spent in negative energy balance.

The fresh calved cow has a major energy gap between what she can eat herself and the energy required to generate the amount of milk she is genetically programmed to produce.

Another major factor is that we cannot allow the animal to eat too little forage. In order to keep the rumen healthy it is sensible to aim for 50 to 60% of dry matter intake from forage. The cow becomes more likely to get twisted stomachs and or acidosis as this ratio is reduced. F1 Yeast is well proven to increase intake.

Solving this conundrum is the key to maintaining a healthy productive animal that can get back in calf around 84 days or when served first time. Target energy density for this group is 12.4 to 12.75 MJ/Kg DM. Hard to achieve with low quality forage.

These cows are often given an ultra-high energy supplement designed to bridge negative energy balance caused by a reduced appetite. In the USA and Canada Glycerol is used but it is not as effective as Monopropylene Glycol (MPG). Simple sugar analogues are much more readily available as a glucose source in the liver than saturated fats which are much more complex and after lipolysis take more time to break down to glucose. See F1 Elevator above.

KEY PRODUCTS

◊ • Optomega Plus

Optomega Plus will supply the animals Omega 3 requirement in full and is often her only supply of EPA & DHA the two essential fatty acids. This product not only promotes a healthy more fertile egg but also helps to reduce membrane inflammation throughout the body. The Parenchyma (milk secretion tissue in the udder) also benefits from this, and the research has been able to demonstrate a good yield response.

◊ • F1 Novatan

Novatan is a plant extract/mineral compound designed to modify rumen microbe populations into becoming much more efficient at using and capturing rapid breakdown proteins. The net effect is lower blood and milk urea's which are known to aid fertility. There is also a strong milk protein and yield response. Novatan is now a well proven product rapidly increasing in popularity.

◊ • F1 Yeast

F1 Yeast supplies a carefully prepared, concentrated dose of our selected live yeast strain for optimum rumen conditioning both before and after calving.

After much consultation The F1 range has been enhanced by the addition of a version which will deliver both F1 Yeast and Mycosorb A+ © via one combined product.

◊ • F1 TMR Dairy Mineral & F1 TMR Dairy SCC Elite Mineral

Following a 6-year development program the F1 TMR Dairy mineral is without doubt the most comprehensive dairy mineral supplement we have ever designed. Its formulation is now protected. F1 TMR SCC Elite contains all of the major trace elements needed to maintain the immune status, cell count, hoof condition and maintenance. This product is recommended to be fed at 150 to 200 grams per cow per day during early lactation.

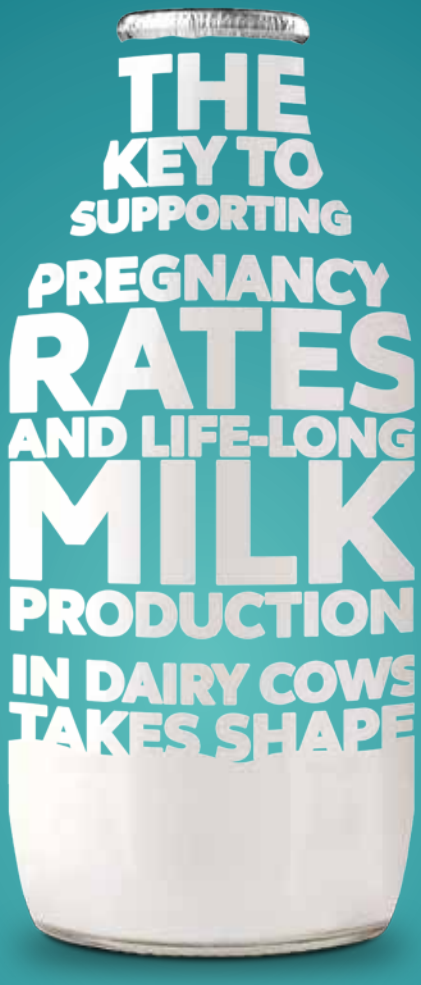
These minerals include the UK F1 Super Hoof formulation.

◊ F1 16 Molasses / F1 Supermol

When developing our appetite and energy balance strategy, we felt there was room for a higher energy liquid product. F1 Molasses products retain a high sugar level along with good protein and extra energy ingredients.

Optomega PLUS™

Nature's Answer from **Anpario**



Contains a consistent, high level of EPA and DHA

EPA and DHA support the establishment and maintenance of pregnancy

Improved energy balance helps to support lactation performance and growth rates

Unique foil-lined packaging ensures freshness

To find out more visit:
www.anpario.com/optomega-plus

Anpario
Nature's Answer

YEA-SACC®

YEA-SACC® from Alltech® is a live yeast that promotes rumen stability, helping cows avoid the wide variations in rumen pH that can interfere with fibre digestion and feed intake. Yea-Sacc enhances digestibility, meaning more nutrients are converted into milk and less potential energy is wasted.

The most widely-researched yeast for ruminants, Yea-Sacc is also validated by the Carbon Trust to reduce methane emission intensity and nitrogen excretion.

Good for your herd, your pocket and the environment.

For more information visit
Alltech.com/Yea-Sacc

Lakeland-Scottish Feeds & Services

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Alltech®

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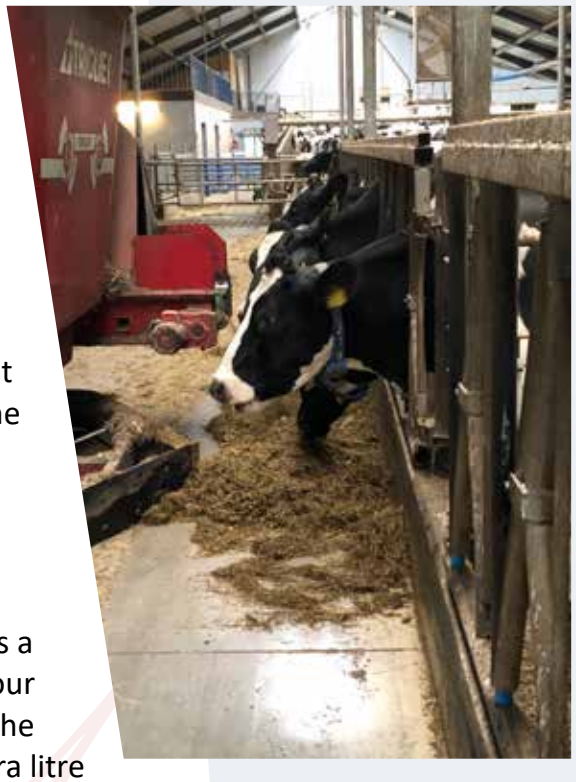
◊ Mycosorb A+ © or Toxfin XL Dry



Alltech have had Mycosorb A+ toxin absorbent on the market for a number of years. The F1 Dairy Blueprint happily endorses Mycosorb for tackling the typical toxin loading from mouldy forages and moist feeds.

Toxfin XL Dry is the latest version of a product which has been extensively tested and re-formulated to provide an effective solution for feed contaminated by over 500 recognised mycotoxin challenges. If there is any sign of contamination from moulds, this product will get on top of it. The product is fed neat (no carrier) typically at 20 grams per head per day but more if the challenge demands it.

◊ F1 Elevator

This product used in the close-up diet to trigger liver function is also used in the fresh cow diet to further enhance the effect, it is a blend of Glycerol and Monopropylene Glycol with a unique flavour added. We recommend that feeding 250 to 300 ml per day for the fist 21 days of lactation will give an average response of @ 1 extra litre per day for the rest of the lactation and help to improve fertility by reducing the negative energy gap period following calving.

◊ ReaShure ®-XC

We recommend that you continue to feed this to cows in the recovery pen and up to 21 days post calving, if possible.

It is extremely cost effective and has a great effect in lifting milk yield by ensuring the transfer of fat (Lipids) to the mammary gland at the start of the lactation. (see above)

◊ F1 Super Fat

The F1 Blueprint recommends this especially designed fat supplement which has been carefully formulated to effectively supply a large dose of extra energy to cows in early lactation, when needed.

F1 Super Fat can also be used as a reliable diet energy status test. This product was developed in order to address the common problem of reductions in dry matter intakes noticed when some other brands of protected fat are fed.

F1 Super Fat is based on a top quality pure refined fat featuring a high level of both C16 and C18 fatty acids. As a consequence it is both yield and butterfat positive.

◊ Adding 500 grams of F1 Super Fat will supply enough energy for 2.5 kilograms of milk, so if you get a quick response by doing this, it will show that the diet has been underfeeding energy.
No response would indicate that the diet is about right, or possibly over feeding energy!

OPTION 2 (EARLY LACTATION TO 120 DAYS)

MANAGEMENT PRIORITIES

Many dairy units are unable to handle too many different cow groups so Option 2 allows for a traditional early lactation group.

This choice requires a slightly different approach to bridging the energy gap.

By diluting the high energy concentrate a little and feeding over a longer period we are still able to gain a similar result.

The use of specifically targeted liver performance improving products like ReaShure®-XC, LF Transition and F1 Elevator (protected methionine & choline complexes and propylene glycol etc.) is very cost effective in the Fresher group of 21 days, but it has to be reviewed carefully if used for a longer term.

It is, however, very good practice to maintain a high energy TMR along with a high proportion of bypass protein for this group along with the use of Optomega Plus which will aid fertility and give benefits in many other areas.

Again one key function of this diet is to maximize intakes. Targeting at least 6 Kg NDF is of major importance and can often be overlooked in the quest for a high energy density but it is worth remembering that an energy density increase of say 0.3 MJ/Kg DM on a 24 Kg intake is only 7.2 MJ where as an extra kilo of dry matter intake is usually at least 12 MJ!

The authors of the F1 Blueprint are keen to stress that it is well worth while consulting a qualified nutritionist in order to ensure that the diet is well balanced.

KEY PRODUCTS

- ◊ Optomega Plus
- ◊ **F1 Elevator**
- ◊ ReaShure®-XC
- ◊ **F1 Yeast**
- ◊ F1 TMR Dairy mineral
- ◊ **F1 Super Fat / Mawerlac Gold**
- ◊ F1 Novatan
- ◊ **F1 Molasses**
- ◊ Mycosorb A+© or Toxfin XL Dry

MawerLac Gold

- 100% Protected Fat.
- 50% C16 & 50% C18 fatty acid profile.
- Boost Milk Yield, Butterfat % and maintain herd health with a High Energy Fat Prill.
- Good commercial option versus 84% fat calcium soap.
- Non-GM
- RSPO Palm Trace Option
- Free Flowing easy to use Fat Prill

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Liquid Products

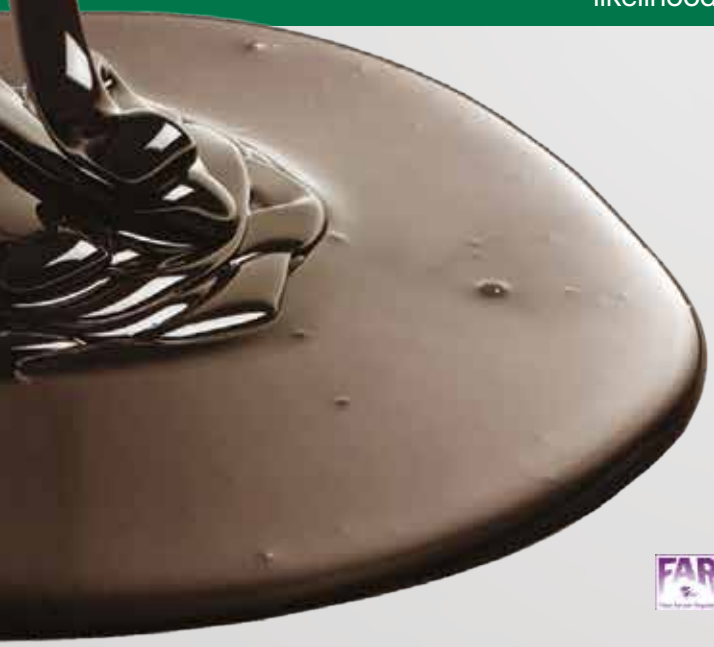
Molasses Blends

The Essential Ingredient

RESEARCH PROVEN

Fresh-Guard
Ration Conditioner

- Molasses based liquid feeds continue to represent excellent value for money in today's market
- Remember, 2kg of a high protein molasses based liquid feed can be utilised to replace up to 1.6kg of conventional protein sources in a ration potentially saving up to 10p/cow/day
- Make the most from grass with additional supplementation to maintain production and correct grass imbalances
- A well-balanced buffer feed can ensure maximum dry matter intakes are achieved
- **Fresh-Guard** can be added to any bulk blend to reduce the effects of ration heating
- Magnesium can be added to any bulk product to help reduce the likelihood of grass staggers



Want to know more?

Contact your local Commercial Manager:

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Danielle Goatley	**07710 075824**
Georgina Chapman	**07485 192774**

Nutritionist | Technical Support Manager

Freephone 0800 3898450

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Feeding Britain's Farms

BULLING

Following the F1 Dairy Blueprint will undoubtedly prepare the cow for a successful service but it is very worthwhile looking at other management factors.

Stockmanship and environment are major factors to consider at this point in the cycle. Recent research has shown that housed stock are more active and will stand longer if a level soft floored loafing area is available. Large herds are more likely to have more than one cow bulling at the same time, this will also increase activity.

The use of a “bulling ration” more broadly defined as an extra feed of @2Kg of concentrates only to cows that are two or three days off their ovulation; is a technique that was used when cows were virtually all fed on just grass or silage and cake! This could still be a useful boost to cows who will tend to have a more successful pregnancy rate when they are boosted to a higher plane of nutrition during this brief period. Farmers with out of parlour and in parlour feeders can easily apply this technique.

It is a testimony, however, that farmers who use a single TMR can still achieve impressive pregnancy rates when general cow and feeding management detail is good, and products like Optomega Plus are fed.

MID LACTATION

(120 DAYS TO END OF LACTATION OR LAST 56 DAYS OF LACTATION)

The key management target for this group is to maintain a high yield whilst ensuring that the cow finishes her lactation at her target condition score.

If conception rates are poor many herds will carry cows through very long lactations. These cows tend to accumulate too much condition and are vulnerable to developing fatty livers, weak hearts, and have difficult calvings.

A common misconception at this time is that mid-lactation cows can carry on being fed the same diet as the early lactation group but have the level of concentrates cut and the forages increased in order to save money.

This can be daft but can also improve profits!

The result of this is that cows entering the group can drop their condition and then lose yield. The costs are reduced but if the cow makes up for the reduction in concentrate contribution by mobilising her body fat and mineral reserves, she may not be able to recover enough to achieve good longevity.

Modern high output genetic potential means that this type of cow is better managed by maintaining a high density diet throughout the lactation and keeping a close eye on condition in order to ensure a good subsequent lactation and health status.

It is important to keep an eye on condition and feed to maintain it at a sensible level scoring around 2.75 to 3. This will keep the yields up for longer.

When this is the case, she need not enter a late lactation “conditioning” group. Instead she can be dried off and progress to the far off dry group.

We advise balancing the forage to around 17% protein and a minimum of 6 Kilos of NDF.

It is also important to keep the calcium levels and the rest of the mineral intakes on target. It is very easy to underfeed minerals at this point.

Maintaining the inclusion of F1 Novatan and F1 Yeast will also sustain the lactation.

MINERALS

Mineral nutrition is considered by some, to be a distinct area of specialisation. Farmers and vets alike are well aware of the consequences of major mineral imbalances causing metabolic diseases like Milk Fever or Grass Staggers.

In fact mineral imbalances, deficiencies and excesses cause much more sub-clinical (unseen) problems than clinical cases.

The mineral supply industry has had a terrible reputation in the past for two key reasons:

- **They play a numbers game. "Our product is better because it's got more of element X and vitamin Y."**
- They are negative pressure sellers "If you don't buy this bad things will happen!"

On the next page we show a list of all the bad things that can happen and how they are linked to individual elements and mineral / vitamin complexes.

There is no doubt that all of these effects are well researched and are quite genuine. However, as we all know using a well-balanced supplement can keep everything on track.

Our modern high output cow needs a more professional approach to her mineral nutrition than "Our product is better because it's got more of element X and vitamin Y."

The F1 Dairy Blueprint recommends a comprehensive balancing service based on multiple forage assays, and intelligent use of protected trace elements and vitamins in order to accurately supplement the cow within the recommended and legal limits.

This approach is both nutritionally and cost effective.

Mineral & Vitamin	Effect	Deficiency
Calcium	Development of bones and teeth, muscle function, blood clotting, milk production.	Difficult calving, milk fever, rickets
Phosphorus	Development of bones and teeth, milk production carbohydrate & energy metabolism.	Rickets, infertility, milk fever.
Magnesium	Bone development, nerve function. carbohydrate metabolism.	Grass staggers milk fever.
Salt	Osmosis, food digestion, palatability.	Poor growth & feed use.
Vitamin A	Skin & hair formation, mucus membrane protection.	Night blindness, Infertility, weak & blind young stock.
Vitamin D3	Controls absorption of calcium	Retarded growth rickets.
Vitamin E	Anti-oxidant, immune system	White Muscle disease, stiff lamb, muscular dystrophy, Mastitis.
Vitamin B12	Mobilisation of fats, synthesis of fatty acids, enzyme systems.	Poor milk quality, pine, and poor appetite.
Iron	Blood production, enzymes.	Retarded growth, Anaemia.
Cobalt	Vitamin B12 production, enzymes.	Pine in sheep, poor appetite.
Manganese	Skeleton growth, metabolic management, enzymes.	Poor growth, Infertility.
Copper	Blood production, enzyme systems, hair and wool colour	Anaemia ,hair pigments, poor growth, swayback in lambs
Zinc	Production of skin, hair and wool enzyme systems, immune system.	Mastitis, somatic cell count, hoof hardness.
Iodine	Thyroid hormone synthesis.	Goitre, infertility, abortion.
Selenium	Anti-oxidant.	Fertility, mastitis, Immunity, muscular dystrophy, white muscle disease.

BRITANNIA

ENERGIZED CALF MILK

Energized Calf Milk (ECM) is designed to revolutionise the way we feed calves. ECM has been designed to support the LifeStart objectives:

- **OPTIMAL DEVELOPMENT**
- **RESILIENCE TO DISEASE**
- **LONGEVITY**

All the benefits of a calf milk replacer plus...

20% less osmolality

With an osmolality of 350 mOsm/kg, ECM is the closest to the 330 mOsm/kg in cow's milk.

10% more metabolisable energy

There are 2.9 MJ of ME in 1 L mixed at 135 g/L.

balanced mineral content

Reformulated for elevated planes of nutrition.

LIFESTART® SETS LIFE PERFORMANCE

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lakescot.co.uk/britannia
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Lakeland-Scottish Feeds & Services

TBA

Lakeland Scottish and TBA work in partnership with Trouw Nutrition

- Trouw Nutrition's Analytical Services laboratory at Ashbourne has a dedicated professional team to ensure consistency of analysis across a wide range of products.
- Mineral specifications are carefully formulated by our team of expert nutritionists and are individually tailored to specific systems to deliver optimal performance efficiency.
- Using the latest R&D, we collaborate to deliver innovative solutions to meet the demands of modern livestock production and offer different approaches to farm animal nutrition.

Lakeland-Scottish Feeds & Services

TBA

trouw nutrition
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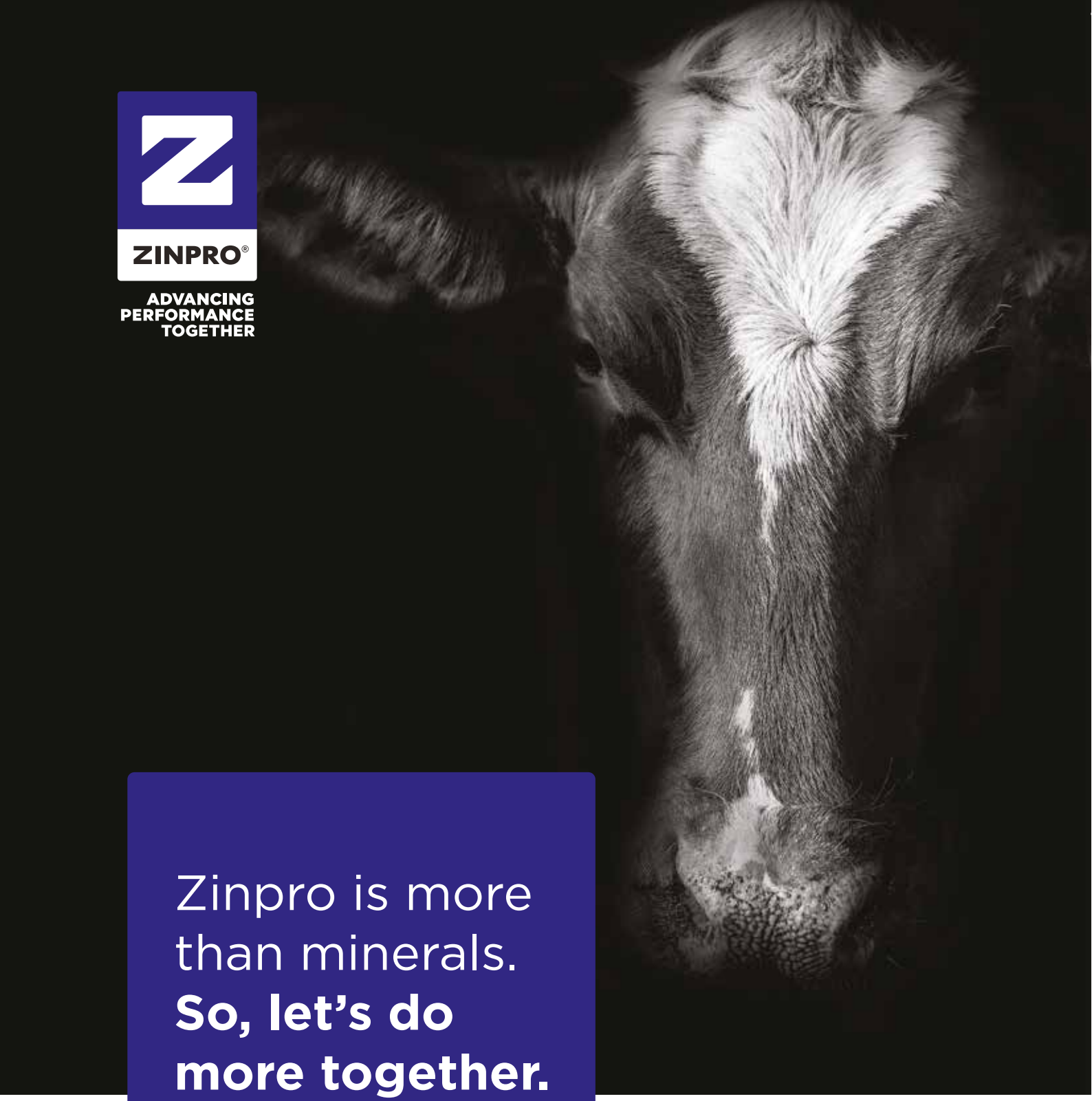

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ADVANCING PERFORMANCE TOGETHER

Zinpro is more than minerals. **So, let's do more together.**

Solutions that take performance beyond nutrients.

At Zinpro, we believe that to do more to advance animal performance, you have to go beyond simply ensuring the right nutrients. That's why we not only offer the best and most researched trace minerals, but we also work with customers to provide comprehensive solutions, tools and resources. All to further knowledge and practices, maximize animal productivity and wellbeing, and increase your operation's profitability.

Learn how you can start doing more at **zinpro.com**

#MoreThanMinerals

Pleased to be associated with the F1 brand for the past 15 years.

POST SCRIPT

This F1 Dairy Blueprint has looked at many progressive management feeding techniques needed for modern dairy cows.

The highest yielding herds of Holsteins in the UK are now averaging over 13,000 Kilos of milk per year! This modern cow can be incredibly efficient and offers a healthy reduction to the carbon footprint required to produce a kilo of milk.

But these animals are in many respects, like olympic athletes and we need to pay careful attention to detail if we are to manage them efficiently.

There are two key fundamental elements that should be considered before deciding what management techniques are required.

1. Have we set up our heifers well enough to cope with the stress of a high productive life? Their health, welfare and longevity will all be determined to a great extent by their management from birth to calving.

2. Does our existing management and housing system allow us to apply the techniques required to succeed in maintaining a high output at an optimum input?

If the answers are both yes, then there is no doubt that assembling a good team of workers and advisors who are all invested in achieving the best outcome, will work well and be hugely rewarding.

If the answer is no or not quite, then the system in use will need alternative strategies in order to achieve the best profits. All dairy cows, regardless of type or breed need to be maintained in good health and this F1 Dairy Blueprint contains much of the feeding information which should apply to cows that are not destined for superstardom, as well as those that are!

Close Up Dry Cow management is the key to success or failure of the next lactation. The techniques described here are all well proven and I would encourage every dairy farmer to prioritise this part of the cow's cycle for the "no corners cut" approach.

Finally, we have spent much of the COVID 19 Lockdown time reading research and developing our websites, both of which offer a huge amount of useful information on all thing's ruminant nutrition!

Our current and ongoing project is looking at the best way to produce heifer replacements that can stand up to high outputs and also achieve a much longer and productive life that they do currently.

Did you know that if you look at a cross section of a bone taken from a heifer at calving, it will be a good solid and relatively heavy item? If you do this with a typical say 4th lactation cow it will look like an open sponge structure and it will be lighter. This is because the cow continually mobilises calcium and other mineral deposits in her bone reservoir and uses the minerals for maintenance and milk production.

Whole milk contains typically 1.18 grams of calcium per litre. An average cow giving say 33 litres of milk per day exports 39 grams of calcium each day. Most cows at this level of production will need around 150 grams per day from the diet.

These cows never manage to replace the skeletal calcium reserve at quite the same rate that it is mobilised. The best solution is to manage calcium inputs throughout the cycle.

The lifetime performance will benefit significantly if the heifer calf feeding program is designed to create a larger reservoir before the she calves for the first time.

Why am I using this example?

Because it illustrates why we need to review our growth target protocols for heifer calves.

Many references target Holstein heifers to calve at 2 years weighing around 590 Kilos! This is never going to work for modern Holsteins in 2021! Our new target is 670 to 690 Kilos calving at 22.5 to 23 months of age because these cows will be more durable. I know that certain bloodlines will need to be assessed at a lower figure but as a typical target, 680 Kilos is a good goal.

We should also review the whole feeding program from birth to calving because once we have created our optimum heifer, we will have a much better chance of success.

With the exception of calf milk replacers and whole milk research, not much progressive study has been done on how to achieve this goal until now.

Our Birth to Calving Blueprint is still very much a work in progress but watch this space on the website because in autumn 2021 we will be trialling the next generation system backed by some of the worlds best university studies and commercial expert nutritionists.

Here's to a successful and profitable future.

Cheers! 

Jerry Trowbridge

THE F1 DAIRY BLUEPRINT

8th Edition 2021

Support & Backup Services

TBA Ltd is a specialist company in the dairy and livestock industry established in 1995. Now based near Blandford Forum in Dorset, to service the South and West of England, TBA Ltd is managed by Trevor Birchall.

LSFS Ltd was set up in 1997 by ex ABN consultant Jerry Trowbridge. Based at Penrith in Cumbria the company services a wide area of Scotland and the North of England.

We are now able to cover the whole of the UK due to recent expansion and via our agents.

"Your business profitability is our priority".

Both companies have succeeded in staying at the forefront of ruminant nutrition by readily adapting up to date research into products and services designed to keep their customers ahead of the rest. They both offer all of the feedstuffs and associated products you could need and will customise the best selection for your chosen system.

Both Trevor and Jerry have a long and detailed experience of ruminant feed industry.

How do you make this F1 Blueprint work for you?

TBA and LSFS (Lakeland-Scottish Feeds & Services) offer the full range of nutritional support services. We use the most up to date version of Ultramix, the best nutrition software available.

We suggest that you meet with one of our qualified and FAR registered nutritionists before you start on the blueprint. We will help you to assess the best ways of making the group strategies work properly on your farm.

We can balance the rations you will need according to the types of forages that you are using.

Finally, we will set up regular visits to help you make sure that it all works according to plan.

Lakeland-Scottish Feeds & Services

TBA

Universal Feed UFAS Assurance Scheme

FAR aic Feed Adviser Register