The F1 Dairy Blueprint

7th Edition 2020

Lakeland-Scottish Feeds & Services

TBA

FAR Feed Adviser Register

F1 Genetics Nutrition

F1 is the intellectual property of TBA & Lakeland Scottish

Introduction to the F 1 Dairy Blueprint

The F1 Dairy Blue Print 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 around threefold 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 2018 UK average calving interval is 400 days. Reducing calving interval by 25 days is worth £115.50p per cow!
- **Feet**
- Average costs are calculated at £113.2 per cow for mild lameness.
- **Udder Condition**
- Mastitis and high cell count accounts for £201 per infected cow. 2018 Average UK Cell count was 178,000 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.

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.

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.

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.

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.

F 1 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 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. The cow's real requirements still tend 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!

We feel that the modern dairy cow can achieve both a 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 choice 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 the majority 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 is proving to have tangible benefits.

The F 1 Products

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.

The 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 **F 1 Bio Hoof** and **F 1 Bio Bath** 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 F 1 Dairy Blueprint range. (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 grams of Metabolisable Protein (MP) 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 can start to decrease. This is one key reason for having a separate close up (or transition) group.

We have found that if we can keep the diet stable within the key parameters for NDF and MP (above) ; that intakes can remain remarkably stable right up to the day before calving.

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.

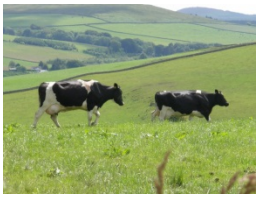
- **The split feeding system.**

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 between 3 and 3.5.

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 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

• F 1 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, Selplex, 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

• F 1 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.

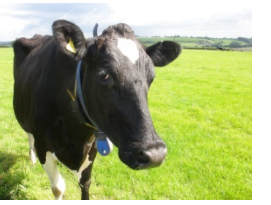
Note autumn grass, molasses and pot ale syrup are usually high in Potassium.

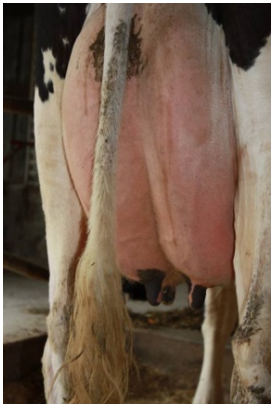
• F 1 Yeast
To maintain a healthy rumen microbe population.

• 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 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

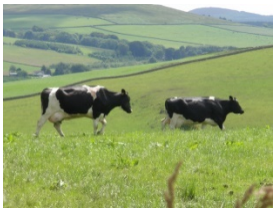
This close up period is critical in determining the success of both calving itself and the coming lactation. The main priorities of nutrition are to avoid the symptoms of both clinical and sub-clinical milk fever and to ensure liver function is at peak efficiency.

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).

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® in this situation is probably the best option. (See below).

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.

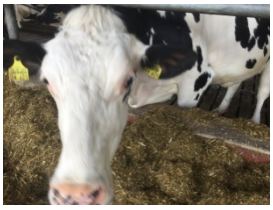


2. Dietary cation-anion difference, or DCAD, is a measure you should be using in both dry and lactating cows. In close-up dry cows, a negative DCAD can help prevent metabolic problems and in lactating cows, a positive DCAD can help increase milk production and milk components. The most common equation 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 10 square metres per cow though more is preferable.

Stress reduction is hugely important so good housing environment with at least 30 inches (850cm) 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.

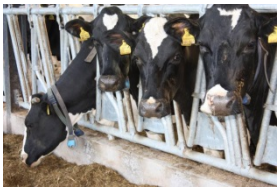
• Restrict high in potassium forages to 3 or 4 kilograms of dry matter.

• Feed a target of 1200 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® 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.



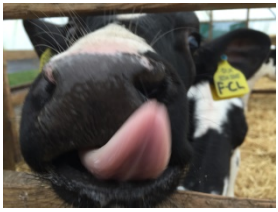
Note: protected fats are not recommended at this stage of the cow's cycle.

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

Penn State University has found that including higher levels of clean 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 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 products like Credence © 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

F 1 Yeast. Recommended @ 25 to 50 grams

Recently voted as a most trusted brand in a national market survey (2015) 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 fertility, feet, milk quality and condition can all be associated with the use of this product.
Using F 1 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 2020 version includes an activator which enlivens the yeast and further improves the benefits resulting from its use.

FiMLAC Dry Cow Rolls. Recommended 2Kg Massey Feeds (North) Harpers (South)

This compound dry cow roll has been formulated to include the features of Transpher 20 in a 2kg dose of rolls. It is a semi DCAD formulation which will need little DCAD help with Magnesium Chloride unless the forages are high risk.

Reashure Recommended at 60 grams

A great strategy for **reducing the risk of ketosis** and improving post calving milk yields.

Rumen protected choline fed at 60 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)!

Choline facilitates the export of fat from the liver to the mammary gland where it is used to make milk. This function if choline also occurs right through the whole lactation. 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 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.

Most Rumen protected choline products are fat embedded of encapsulated. The inclusion in dry cow compounds generally has a major effect in reducing the protection due to the heat involved at the cubing orbits in the feed mill.

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!

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 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.

F 1 Elevator Recommended. 250 to 300ml

This product is a blend of Glycerol and Mono-Propylene Glycol with a unique flavour added. It will provide a significant dose of energy just when the cow needs it. F 1 Elevator also has a major effect on optimising appetite during this critical part of the dairy cow cycle. (see below)

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

F 1 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).X-Zelit® **(Not for use with DCAD systems)**

F 1 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.

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 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.

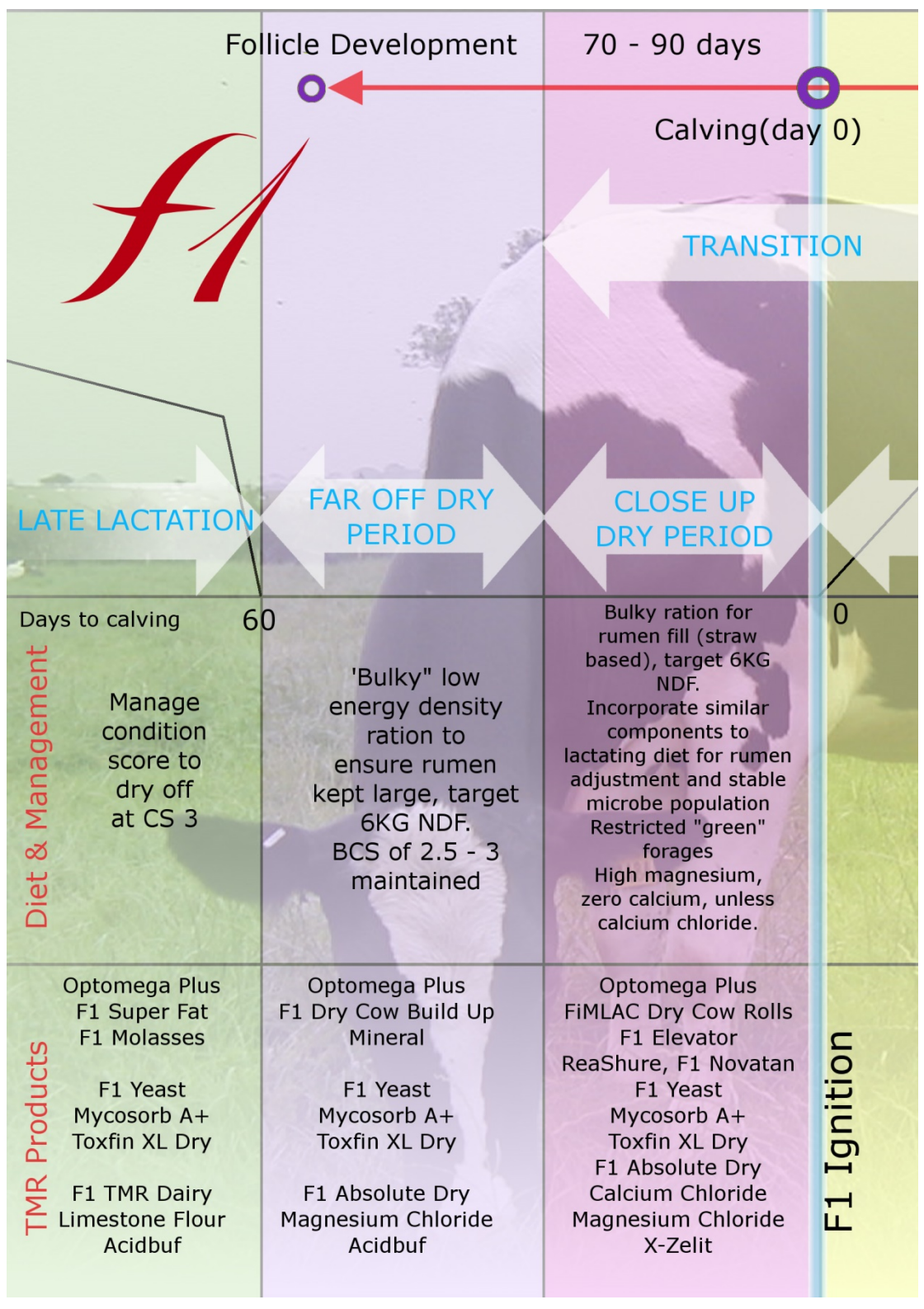
It is important to allow the cow some quiet time to find her most comfortable position. (Usually backed up against a wall!)

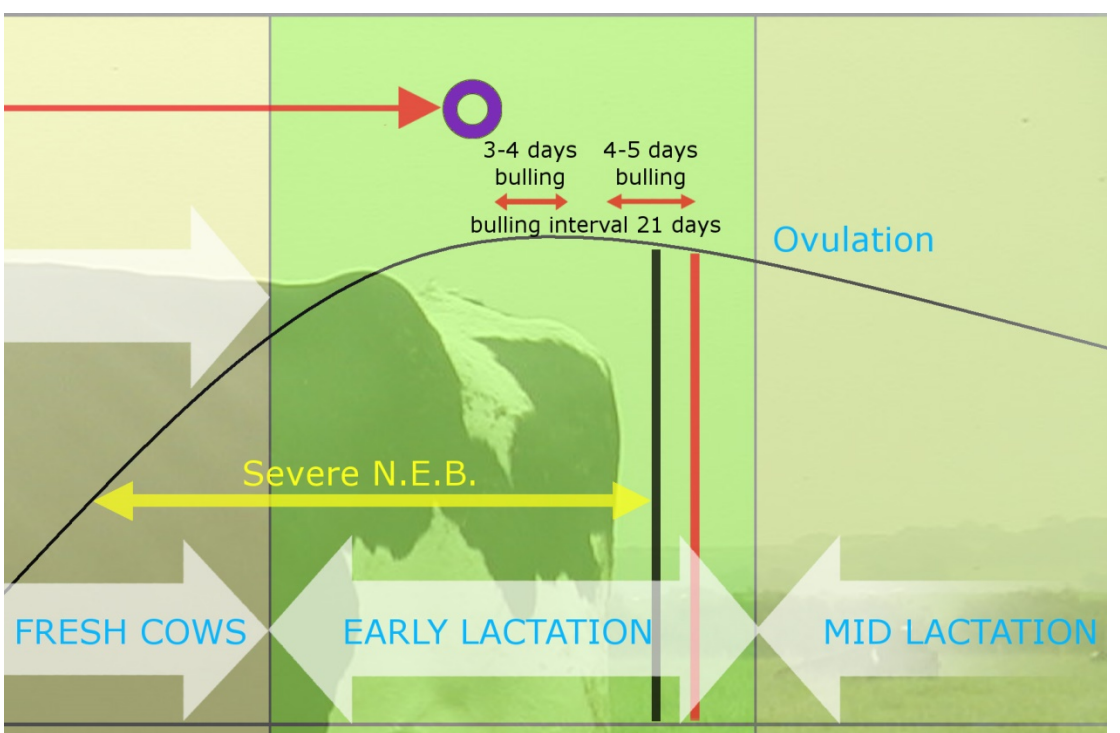
She will require a large expenditure of energy for her labour and to expel the calf and the afterbirth.

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. **F 1 Ignition** is ideal for this purpose.

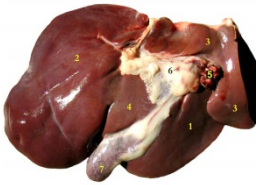
Key products

- The F 1 Blueprint recommends **F 1 Ignition** as a voluntary drink of around 20 to 40 litres or as a drench of around 35 litres. This mix of electrolytes, 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.


Follicle Development
70 - 90 days
Calving(day 0)
TRANSITION
LATE LACTATION
FAR OFF DRY PERIOD
CLOSE UP DRY PERIOD
Days to calving
60
0
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 lactating 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
Limestone Flour
Acidbuf
Optomega Plus
F1 Dry Cow Build Up Mineral
F1 Yeast
Mycosorb A+
Toxfin XL Dry
F1 Absolute Dry
Magnesium Chloride
Acidbuf
Optomega Plus
FiMLAC Dry Cow Rolls
F1 Elevator
ReaShure, F1 Novatan
F1 Yeast
Mycosorb A+
Toxfin XL Dry
F1 Absolute Dry
Calcium Chloride
Magnesium Chloride
X-Zelit
F1 Ignition



FRESH COWS	EARLY LACTATION	MID LACTATION
Create a "fresh cow" group to boost rapid drymatter 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.	Maintain a high density diet. Good rumen health Help cows cope with negative energy balance Continue feed focus on fertility	Maintain diet density at least until cow is confirmed in calf
F1 Fresh Start Optomega Plus F1 Elevator F1 Molasses ReaShure F1 Yeast F1 Novatan Mycosorb A+ Toxfin XL Dry F1 TMR Dairy Min. Limestone Flour Acidbuf	Optomega Plus F1 Super Fat F1 Molasses F1 Yeast F1 Novatan Mycosorb A+ Toxfin XL Dry F1 TMR Dairy Mineral Limestone Flour Acidbuf	F1 Super Fat F1 Molasses F1 Yeast F1 Novatan Mycosorb A+ Toxfin XL Dry F1 TMR Dairy Mineral Limestone Flour Acidbuf



Liver Function

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 livers 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.

- **F 1 Elevator**

This product is used in the close up diet to trigger liver function, it is a blend of Glycerol and Mono-Propylene Glycol with a unique flavour added. It will provide a significant dose of energy just when the cow needs it. F 1 Elevator also has a major effect on optimising appetite during this critical part of the dairy cow cycle.

Feeding 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.

ReaShure Feed at 60 grams

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.

Rumen protected choline fed at 60 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 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.

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 post mortem 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 use 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.

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 buildup 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 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 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. **F 1 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 mono-propylene glycol (M-PG). **See F 1 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.

• F 1 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.

• F 1 Yeast

F 1 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 F 1 Premier, which will deliver both F 1 Yeast and Mycosorb 37+ via one combined product.

• F 1 TMR Dairy Mineral & F 1 TMR Dairy SCC Elite Mineral

Following a 5 year development program the F 1 TMR Dairy mineral is without doubt the most comprehensive dairy mineral supplement we have ever designed. Its formulation is now protected. F 1 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 F 1 Super Hoof formulation.

• F 1 16 Molasses.

When developing our appetite and energy balance strategy, we felt there was room for a higher energy liquid product. F 1 Molasses retains a high sugar level along with 15% protein and extra energy ingredients.

• F 1 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.

• Mycosorb A+ © or Toxfin XL

Alltech have had **Mycosorb A +** toxin absorbent on the market for a number of years. The F 1 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 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.

F 1 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 F 1 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!

Liver Function

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 livers 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.

- **F 1 Elevator**

This product is used in the Fresh Cow diet to stimulate liver function, it is a blend of Glycerol and Mono-Propylene Glycol with a unique flavour added. It will provide a significant dose of energy just when the cow needs it. F 1 Elevator also has a major effect on optimising appetite during this initial stage of the lactation.

Feeding F 1 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.

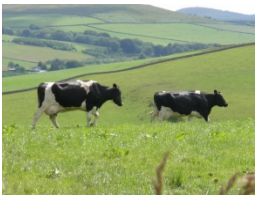
We have looked carefully at the blood chemistry around calving and the beneficial effect of this approach can be checked quite easily using this technique.

The mode of action of F1 Elevator is entirely different from that of ReaShure below.

- **ReaShure**

All cows at calving will enter a period of 'negative energy balance' 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 can, therefore, lead to fatty liver syndrome or even full blown ketosis, which, even at sub-acute levels, will have significant knock-on implications for the cow's health, milk yield and milk quality throughout her lactation. This will, therefore, have a significant impact on profitability.

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 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!

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 products like ReaShure LF Transition and F 1 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 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 F 1 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**
- **F 1 Elevator**
- **ReaShure**
- **F 1 Yeast**
- **F 1 TMR Dairy mineral**
- **F 1 Super Fat**
- **F 1 Novatan**
- **F 1 Molasses**
- **Mycosorb A+© or Toxfin MX Dry**

Bulling

Following the F 1 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.

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

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 F 1 Novatan and F 1 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 F 1 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.

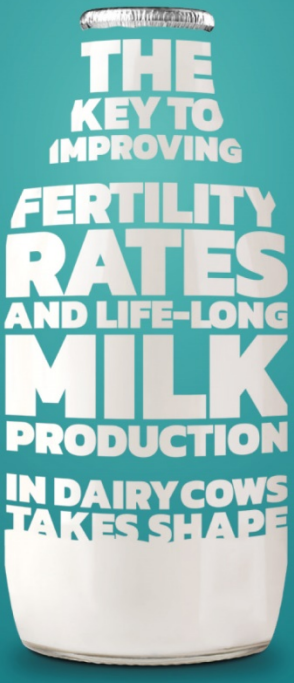
Mineral & Vitamin	Effect	Deficiency
Calcium	Development of bones and teeth, muscle function, blood clotting, milk production.	Difficult calving, milk fever, rickets
Phosphorus	Development of bones and teeth, milk production carbohydrate & energy metabolism.	Rickets, infertility, milk fever.
Magnesium	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.

Optomega PLUS™

Nature's Answer from **Anpario**

Want to improve herd fertility rates and milk production?

Optomega Plus increases dairy cow fertility by supporting the establishment and maintenance of pregnancy. Enhanced reproductive success increases longevity and thus life-long milk production.



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

Anpario
Nature's Answer

F1 IGNITION

HYDRATION THERAPY

to aid recovery for fresh and downer cows

Product Features

- A highly palatable rumen-filling drink
- Very high energy whey base
- Contains calcium propionate
- A boosting dose of protected choline
- Soluble calcium, phosphorus & a vitamin complex
- Contains a large dose of F1 Yeast
- Available in 15 KG buckets and 1 Kilo sachets

Product Benefits

- Active rumen expansion
- Energizing formula aiding rapid recovery post calving
- Much improved TMR intakes
- Ultimate fertility responses
- Rapid return of full appetite
- Boosting calcium dose to help prevent symptoms of milk fever

FEEDING INSTRUCTIONS

Complementary Feedingstuff for Cattle

1 KG F1 Ignition mixed into 2 Litres of hot (65 degrees Celsius water), mixed, and then made up to 20 Litres with cool water. 2 doses can be given to improved effect.

Storage Instructions

Store in a cool dry place.

Keep out of reach of children.

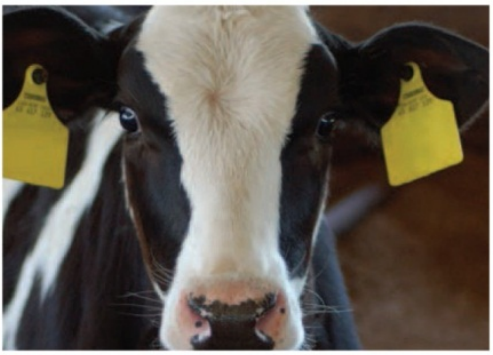
Only use according to instructions.

Mix thoroughly in feed.

Wear protective clothing when handling.

Knowledge | Experience | Results

BETTER SCIENCE MEANS BETTER RESULTS



Our time-tested and proven products are the only true performance minerals on the market. As the most research-proven trace minerals in the industry, Zinpro Performance Minerals® deliver improved performance and greater profitability to dairy operations. Benefits of including Availa®Zinc in dairy cattle diets include:

- Increased milk production
- Decreased somatic cell count
- Improved hoof integrity

For more than 40 years, an uncompromising commitment to superior science and product quality standards puts Zinpro in a class by itself. For more information, visit **www.zinpro.com**.

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PERFORMANCE MINERALS®

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RETURN • RESPONSE • REPEATABILITY • RESEARCH • REASSURANCE

F1 Key Paks

"Getting cows back on track"

The F1 Key Paks have been developed to help combat the serious health and performance challenges that UK dairy cows face.

The F1 Key Pak Lac has been designed for feeding to lactating dairy cows to help combat high somatic cells counts and mastitis problems. Extra high levels of antioxidants including vitamin E and selenium yeast, along with biotin and bio-available zinc help optimise udder health and reduce the risk of problems such as high somatic cell counts and mastitis.

The F1 Key Pak Dry follows the same concept, but is specifically designed for dry cows with a zero added calcium formulation.

The benefits of the inclusions of these antioxidants and bio-available elements will also help promote hoof condition and optimal fertility as part of a well balance diet.

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.

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.

Both Trevor and Jerry have been actively working in the ruminant feed industry for around 35 years.

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 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.

Contact Trevor on 01300 345711 or via www.tbagri.co.uk

Contact Jerry on 07711 034141 or e mail to jerry@lakelandscottish.co.uk