



CHALLENGED BY THE ENVIRONMENT, SOLUTIONS THROUGH DAIRY NUTRITION

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Challenged by the environment, solutions through daily nutrition

Trial results show feeding low carbon compound has no negative effect on milk

Simple, efficient rations are the key to success at Bottoms Farm

Summer season compounds and blends

The focus of the industry on carbon footprint is ever increasing, and rightly so. The UK has put in place a legally binding target of Net Zero by 2045. In order to achieve this it must be driven by increasing efficiencies on farm.

Defining efficiency

The definition of efficiency is to achieve an end goal out of fewer inputs. X kg of milk from less feed, X kg of milk from less cost, X kg of milk from less carbon. Whichever the system you farm: fully housed, grazing, all year-round calving, block calving, there is a place for all of these within our industry and the goal is to improve efficiencies within these systems. There are many ways this can be achieved, and nutrition is just one of the solutions.

RumiTech reduces methane

Legislation will soon mean that feed companies have to include a methane reducing additive in their animal feeds and there are already options on the market. Our unique, natural feed additive **RumiTech** is currently the only additive available in the UK with assurance from The Carbon Trust. Farmers have been feeding RumiTech for over 10 years due to its ability to improve feed efficiency and therefore reduce the cost of production. It has also been shown in numerous trials to lower enteric methane emissions with a recent meta-analysis demonstrating an 8.8% reduction.

What does this mean for your carbon footprint?

In a survey by Scotland's Dairy Sector Climate Change Group, most respondents

reported their carbon footprint was between 1 - 1.2kg CO₂e/litre. According to EC02, enteric methane is around an average of 40% of the carbon footprint in dairy production. As RumiTech reduces this by 8.8%, feeding RumiTech to a herd which has a carbon footprint of 1.2kg CO₂e/litre will reduce the output to 1.158kg CO₂e/litre. For a 200 cow herd producing 10,000litres/cow/year that is a saving of 84,480kg CO₂e not emitted to the atmosphere, the equivalent of removing 38 cars from the road a year or 10 flights around the world. RumiTech has also been shown in commercial trials, to improve feed efficiency and increase FPCM yield by 1kg/cow/day. At only 4p/head/day with current milk price this is a ROI of around 8:1.



This would be equal to taking 38 cars off the road for a year or 10 flights around the world.

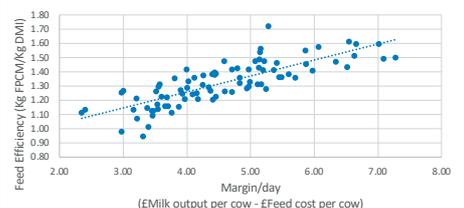


Improving nitrogen efficiency is also directly linked with improving carbon footprint. Over supplying the cow with protein uses energy and so milk yield can be improved with lower CP diets (16-16.5%) if metabolisable protein and amino acid requirements are met. With raw material markets so volatile, a move towards more

homegrown inputs balanced with nutrients, such as amino acids, in the diet is a realistic and essential move forward.

With improving carbon and nitrogen efficiency comes a big bonus, improved profit. Using our Milk Monitor programme, benchmarking the KPIs of feed efficiency and margin/cow/day demonstrates improved profits, regardless of milk price.

FEED EFFICIENCY & MARGIN GO HAND IN HAND



Reduce carbon footprint, increase profit

Hopefully, with these facts, lowering carbon footprint can be seen as a huge positive not just for the environment but for the viability of your business. Using methane reducing additives or utilising homegrown feeds to create optimally balanced rations for your cows are simple steps that can be adopted and provide a return on investment. Doesn't helping to achieve Scotland's Net Zero by 2045 goal seem more achievable if it is partnered with improved profit?

TRIAL RESULTS SHOW FEEDING LOW CARBON COMPOUND HAS NO NEGATIVE EFFECT ON MILK PRODUCTION

At Harbro, sustainable feeding has always been a key focus across the business. We were the first organisation to obtain Carbon Trust assurance for our methane reducing feed additive and we continually strive to reduce the environmental impact, both of our own business, and the farmers we work with.



Giovanni Capuzzello, Glasgow Vet School, Stuart Cameron and Caitlin Palmer, Harbro, Lorenzo Viora, Glasgow Vet School, James Stephen, Inch of Arnhall (left to right)

We have a history of working with leading organisations to find innovative ways to improve the health and performance of animals as sustainably as possible. One of our long term partnerships is with Glasgow Vet School where a team of specialists regularly meet with us on farm to study the performance of the animals we feed. We also have a rolling programme of R&D trials with livestock farmers, which are focused on sustainability and reducing environmental impact. A recent trial at our Dairy Research Alliance Farm, Inch of Arnhall, near Brechin in Scotland measured the impact that a low carbon compound would have on milk production.



This would be equal to taking 21 cars off the road for a year or 6 flights around the world.



A low carbon treatment compound was formulated using our dynamic rationing programme NutriONics and matched nutritionally to the diet and production targets of the cows. It was fed through 2 robots with a comparable compound from another feed manufacturer fed through another 2 robots. The global warming potential of the low carbon compound

was nearly half that of the control: GWP of compound 1 (low carbon) - 345 GWP100, GWP of compound 2 - 673 GWP100. The low carbon compound contained no soya or palm kernel and the competitor compound contained both. Although soya was still included in the TMR for both groups, the next stage in developing the ration on farm is to reduce its usage further. At average use of 4kg, with a milk yield of 35kg/hd/day, compound 1 is contributing 39g CO₂e/kg of milk and compound 2 is contributing 77g CO₂e/kg. Per 100 milking cows, the low carbon compound has the potential to lower the CO₂e for the year for the dairy enterprise by 47,888 kg CO₂e.

Trial results

The results showed there were no production differences between the two groups. Stuart Cameron, Dairy Sales Manager commented: "this is really exciting news for dairy producers. Many parts of the supply chain are challenging their producers to reduce their environmental footprint, with some rewarding farmers that can prove they're reducing carbon on farm. The results show that farmers can now feed a low carbon dairy compound without negatively affecting performance. With the low carbon dairy compound

featured in the trial carrying no additional cost, it makes financial sense to farmers to switch, especially if their milk contract requires it.

Although it wasn't measured within the parameters of the trial, Inch of Arnhall are long standing customers of our methane reducing additive, RumiTech which they feed in their powder dairy minerals. RumiTech can be fed as part of a flexible feeding system, and included in a mineral, compound or blend to complement a farm's available raw materials or feeding system. RumiTech has been assured by the Carbon Trust to reduce methane emissions and some parts of the supply chain give automatic credit for correctly feeding it in carbon audits."

Precision feeding improves sustainability further

Nutrition is just one pillar of our approach to sustainability with management and health also key variables for sustainable milk production. With our new dynamic rationing programme, we're able to create cost effective and efficient precision diets designed to meet the performance and health requirements of the herd. This has financial benefits for the farmer as well as for the environment with the creation of more efficient milk.

To ensure we're continually responding to the evolving requirements of the dairy herd, a key focus is on harnessing the power of data. At Inch of Arnhall, Caitlin Palmer, our R&D co-ordinator has been tracking performance for the past 12 months, keeping a close eye a number of KPIs using our internal performance and benchmark monitoring programmes as well as Interherd+ data and analysing feeding patterns from the Keenan InTouch system.

Maximising resource and nutrient efficiency

Caitlin commented, "the insight enables us to identify even slight fluctuations in performance that could otherwise go unnoticed and we're then able to respond accordingly. This means rations are matched as closely to the biological requirements of the cows as possible, which has a positive effect on performance and also maximises resource and nutrient efficiency, minimising waste and optimising feed efficiency which is essential for farmers at the moment.

SIMPLE, EFFICIENT RATIONS ARE THE KEY TO SUCCESS AT BOTTOMS FARM

Bottoms Farm near Stewarton in Ayrshire is home to the Smith family where William and Marion farm with their son Tom, his wife Louise and their two young daughters.

In addition to their 240 strong Holstein herd, the family run a successful engineering business largely for the agricultural industry. Running both businesses in parallel has enabled the recent construction of a bespoke new dairy facility to house their growing herd. Including a Westfalia parlour and bespoke rapid exit system, the new building has been designed to maximise ease of flow and cow comfort as well as better management.

The diet

The family run a housed herd which enables them to better manage and monitor performance and the same simple feeding system has been followed for a number of years. It is based on making as good a forage as possible which is fed in a TMR alongside a diet of Maxammon treated home grown barley, blend and a dairy mineral pack including RumiTech that is matched to their silage. RumiTech was first introduced to the cows to improve feed efficiency, with trials showing that feeding the additive can typically improve FCR by around 10%.

In addition to the TMR, compound is fed in out of parlour feeders. The cows feed Opal nuts, a high quality soya free compound made at our nearby mill in Lanark. Our dairy specialist Billy Andrew has worked with the Smith family for over 15 years and designs the ration to maximise the family's home grown silage and cereals whilst meeting the requirements of their milk contract which is with Grahams. Billy analyses performance using our Milk Monitor programme, where a number of KPIs are studied, though the key focus is on feed efficiency and minimising price per litre. It is a great way to also check that the diet we want to feed the cows is being fed and utilised by the cows efficiently.



Tom Smith

Key focus areas

Tom has 3 focus areas which he likes to achieve and Harbro help him to do this.

- 1. To make the best quality forage**
Billy Andrew regularly takes pre-cut analysis to ensure that the grass silage is cut at the optimum time. Rather than go by the same date every year, we can ensure that grass is being cut at the best quality.
- 2. Utilising his home grown feeds**
Maxammon grain treatment has been used by Bottoms farm. They have found that it has improved cow health due to better rumen efficiency.
- 3. Diet simplicity**
Using NutriOnics to formulate a single TMR ration (including Grass silage, wholecrop, Maxammon barley, soya, maize, and minerals) fed to all the cows and high-quality compound fed in out of parlour feeders to target higher yielding cows at a rate of 0.4kg/kg of milk.

Billy commented on recent production figures:

The Smith family have always been a high performing unit, and with the recent renovations to the facility, they are managing to be more efficient than ever. In looking at on farm performance using our Milk Monitor programme, one of the most important KPIs we analyse is rumen rate which is an indication of efficiency. The rumen rate measures how many kg of milk the cow can produce per kilo of dry matter intake. With our diets designed to maximise home grown forage and cereals and minimise the requirement for bought in protein, the diet is also proving to be

cost effective. This helps to minimise feed cost/litre and maximise margin which is a must at the moment with increasing external costs.



RumiTech

Scan here to find out how you can improve your FCR and profit and reduce carbon emissions with RumiTech

Summer compounds

Made from quality raw materials, our compounds include a range of protein/energy levels. We have options for grazing, housed herds and robotic systems.

Least cost formulated

With rising input costs, our key compounds this season have been least cost formulated to provide cost effective feeding solutions.

Elite Grass 15%

Designed to achieve efficient milk from grass

- Good energy sources to support milk yield at grass
- High fibre source
- Helps reduce the risk of milk fat depression
- Starch to balance rumen fermentable protein at grass
- Contains minerals suited to balance cows at grass

Enhancer 18%

Designed for housed or grazing systems

- Good levels of fibre and starch to balance TMR ration
- Rumen friendly starch
- Fully mineralised

Our Lanarkshire mill

For farmers in south west Scotland, our Birkhill mill in Lanarkshire enables you to save cost further with:

- Cost effective deliveries to all parts of Scotland and northern England
- Call and collect service available for bagged products and buckets, removing delivery costs



Scan to find out how dairy farmer, Willie Purdie has improved milk yield feeding a new ration including our compounds and blends formulated with NutriONics.

Maximise home grown feed by balancing with Harbro blends

With increasing costs, the key to efficient and cost effective milk production will be maximising home grown feeds in the ration with fewer more targeted inputs required.

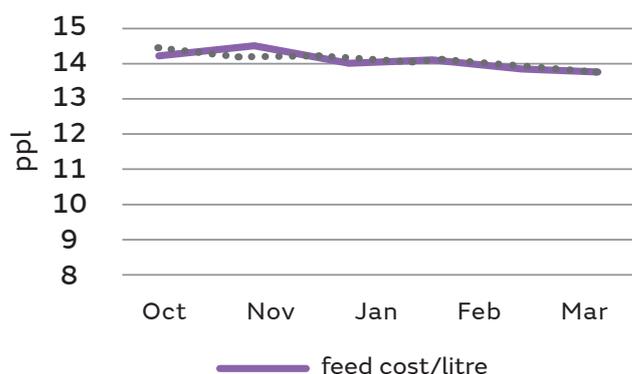
NutriONics

SMART NUTRITION

Our dynamic rationing programme NutriONics allows us to formulate bespoke blends to complement the available feedstuffs on farm, using data from the analysis of these raw materials. It allows for greater resource and nutrient efficiency and provides a targeted, cost effective feeding solution to meet the production, health and fertility aims of the unit.

Our customers that have been feeding bespoke blends formulated with NutriONics are all reporting positive results. This customer has managed to reduce feed cost/litre and improve margin over the winter months.

Feed Cost per litre (ppl)



Margin/Cow/Day/(£)

