

# Precise measure of Amino Acids

Latest research has shown that calf growth rates and feed efficiency can be improved by adding a more precise balance of amino acids.

Recent work carried out by SCA's parent company Provimi compared the performance of groups of calves fed milk replacer with varying levels of crude protein and combinations of amino acids.

The aim of the trial work was to look at the effect of supplementing milk replacers with key amino acids, particularly lysine and methionine. All milk replacers used in the trials contained 17% fat.

Groups of Holstein calves under five weeks old were fed diets of 24% and 26% crude protein, with and without a combination of methionine and lysine.

	24% CP No AA	24% CP AA	26% CP No AA	26% CP AA
N° of calves	24	24	24	24
Ave daily gain kg/day	0.376	0.446	0.415	0.484
Feed efficiency	0.472	0.580	0.523	0.608

Results are shown in Table 1.

A 16% improvement in average growth rate in the group fed a 26% crude

protein milk replacer with added amino acids was recorded and an 18% improvement in the 24% crude protein group compared to the respective groups without amino acid supplementation. Feed conversion rates also improved significantly in both groups receiving amino acid supplementation.

As a result of the work on these key amino acids SCA NuTec has reformulated its range of calf milk replacers with precise ratios of amino acids that most closely match the requirements of the young calf and that can optimise growth rates.

## Calves thrive on conditioner

Dorset heifer rearer Tim Newman works towards target growth rates and looks to get the 600 heifers he rears a year to 375kg at 15 months old, so they are mature enough for serving. To achieve this he knows that work has to start as the 50 heifer calves a month arrive on the unit at one week old.



rumen development and boost dry feed intake, and a prebiotic which provides energy to the beneficial bacteria.

Calves are fed on SCA milk replacer twice a day for the first 10 days then once a day up to weaning. They

have access to creep feed from day 1 and by weaning at six or seven weeks old they are eating 3kg of creep a day and ad lib straw. By 14 weeks old the calves are well enough developed to move on to 3kg of a 16% rearing cake and ad lib silage.

"We get very few problems in these early weeks," adds Mr Newman. "And I think a lot of this is down to the easy transition in the diets, from milk replacer to creep, and the NuStart link that conditions the rumen and gets calves used to dry matter in the diet from an early stage."

"We aim for an average weight gain of 1kg a day from a week old to 12 weeks," he says. "And calves can only do this if they're on a high quality diet."

Mr Newman has used SCA's milk replacer and calf creep for a number of years and is adamant that the two feeds complement each other and help avoid dietary upsets and growth checks at weaning.

Both the milk replacer and creep feed include NuStart, which is a natural gut conditioning package. It includes a blend of essential oils and a functional fibre to encourage

For more information on the products and services mentioned in **Talking Cows** contact:

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NuTec

# TALKING COWS

News and information from SCA NuTec

2009/10



## 'Milking' feed from fibre

**A new feed ingredient, Amaferm, is being launched this autumn by SCA NuTec. Extensive trials have shown that it improves feed efficiency and milk yields by getting more out of the fibre portion of the diet. And it can do this very cost-effectively.**

Amaferm is a natural feed additive that works by providing rumen fungi with the nutrients they need to accelerate fibre digestion.

The rumen cannot function without fungi. These fungi are responsible for cracking open the fibre and releasing enzymes that digest the fibre. They are the first to invade the plant wall, usually within 30 seconds of feeding.

"Accelerating the multiplication of rumen fungi will improve fibre digestion and with that comes better feed intakes, improved feed efficiency and increased milk yields," says SCA NuTec's ruminant manager Norman Downey. "Amaferm has been proven to be effective in this 'fibre busting' process and in boosting the digestibility of rumen fibre and increasing the synthesis of microbial protein."

Widespread trials have proven the benefits of Amaferm. Laboratory tests show a 27% increase in rumen fungal growth and an 87% increase in cellulase activity when compared with the control. And more research has shown that every 1% improvement in rumen fibre digestion increases dry matter intakes by 0.17kg and milk yield by 0.25kg.

"This is where Amaferm comes into its own. Results from 18 different on-farm trials, with cows in early, mid and late lactation, show an average increase in

milk yield of 4.5% where Amaferm is used when compared with the control." Used in blends or as part of a farm pack for TMR diets, Amaferm is designed to be included in milking cow rations at a rate of between 3g and 5g per cow per day. "It is a very relevant and effective feed additive in today's climate of high feed costs, as producers strive to improve fibre use. And looking ahead, it will benefit dairy diets as the availability of fibrous feeds increases, such as by-products from the bio fuel industry," adds Mr Downey.



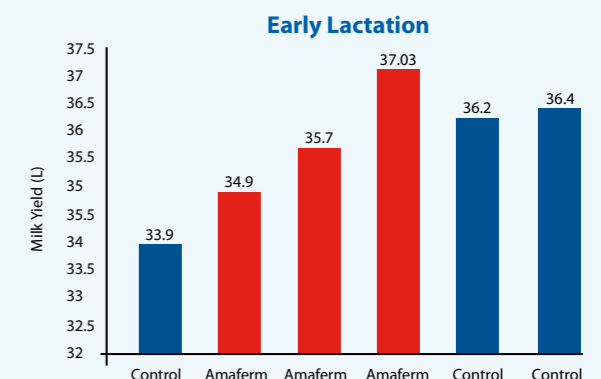
### Amaferm UK trials

Trials on a Lancashire dairy unit showed a response in milk yield of around 2kg a day where Amaferm was included as part of the total mixed ration.

Included at a rate of 4g per cow per day in a grass and maize silage TMR topped up in the parlour for a herd of 134 Holsteins, milk yield increased from an average of 30 litres per cow per day to a maximum of 31.89 litres. A bigger response was shown in early lactation cows where yields increased from 33.9 litres a day to 37.03 litres as shown in Figure 1.

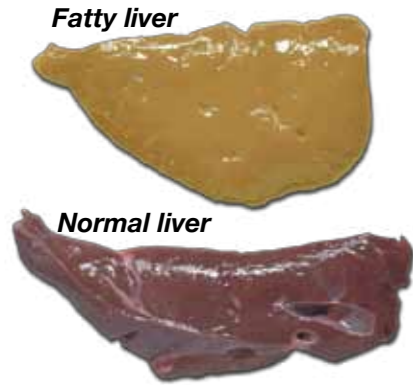
Costing 9.5p per cow per day and based on a milk price of 25ppl this provided a return on investment of 5 to 1. Even at a lower milk price, Amaferm still gives a good return.

Figure 1: Effect of Amaferm in early lactation cows Lancashire, UK, 2009



# Rations can curb fatty liver

At least 50% of cows suffer some form of fatty liver and the effects, typically seen in early lactation, manifest themselves in reduced yields, poor fertility and increased cell counts.



Also, recent work has shown that the activity of Vitamin E is significantly impaired in cows with fatty liver. This vitamin is vital for immunity and for reducing cell counts, mastitis and retained placentas.

Post calving and early lactation is when more body fat can be mobilised. If there

is too much 'in the system' then fat will accumulate in the liver leading to fatty liver. In effect, the liver becomes a bottle neck and it cannot function adequately. This problem is compounded if the cow is over-condition at calving.

"Cows are ending their lactation and going into the dry period with condition scores of 4 or even higher," says SCA NuTec's Norman Downey. "Ideally they should be condition score 3 through this transition phase to ensure good feed intakes and prevent problems like fatty liver at calving and in early lactation."

Preventing fatty liver starts in the dry period. "Producers and nutritionists spend a lot of time on rumen function – the 'engine' of the cow. But they mustn't forget the liver – the 'gear box'. If liver function is impaired, due to fatty liver, it's like driving a car in first gear all the time."

Dry cow rations should be carefully formulated and can include specialised products that include a balance of selected vitamins and co-products that

have been proven to 'prime' the liver. "We have seen, in our own trial work, that including a package of this type – LiFT – yields increase by two litres per head per day in early lactation.

"There are knock on effects too. Through improved liver function we have also seen reduced somatic cell counts - to the tune of 32% - and fewer mastitis cases, reduced incidences of retained placentas and significant improvements in fertility. The economic benefits can be as much as £200 a cow a year."

These improvements are seen when LiFT is included in the transition cow diet at a minimum rate of 50g per cow per day for 21 days pre calving followed by 100g a day post calving to 100 days. Fat and protein yields were also seen to increase in trials and, when supplementation of LiFT was continued throughout the lactation, yields stayed above those in the control groups and its use was justified economically.

# Careful consideration given to rations

North Yorkshire producer Geoff Spence looked long and hard into the merits of using LiFT before introducing it into his dry cow rations.

He runs the Miresdale pedigree Holstein herd of 370 milking cows and 430 head of youngstock on the 84-hectare Lowfields Farm just north of Northallerton in North Yorkshire. Herd average is 10,400kg at 3.9% fat and 3.1% protein with a 13% replacement rate and an average of 4.5 lactations per cow.



Cows work hard at Lowfields Farm but they are rewarded and cow care is paramount.

Geoff looks at the performance and overall appearance of cows and, with his nutritionist, fine tunes rations accordingly.

They're always keen to look at new concepts in nutrition – as long as it is well researched. One of these is the

addition of LiFT to the dry cow ration at a rate of 50g per cow per day alongside wholecrop, grass silage, straw, protein straights, vitamins and minerals.

"We dry off 42 to 45 days pre calving and look to give the cow a seamless transition as she starts her next lactation, making sure the rumen is working to full capacity," says Geoff, who is a 2009 NMR/RABDF Gold Cup finalist.

"We need to look after the liver, particularly in a high performance herd like ours. The cow will go from zero to 50kg of milk a day in two weeks and her liver needs to be healthy. Including LiFT in the ration is a bit like using high grade oil in an engine." With few cases of fatty liver and cows performing well in early lactation and getting back in calf – the average calving interval is 389 days, Geoff is sure LiFT lives up to its trial data on his unit.

"It's important that the cows go into lactation on top form and they need to be aggressive eaters. High dry matter intake is necessary - we look for 27kg in the high group – and we feed maintenance plus 42 litres with a 16% compound in the out of parlour feeders fed at 0.5kg a litre to a maximum of 5kg. Since we included LiFT in the ration we have had no problems achieving this and maintaining a herd of healthy cows."

# Mineral mill grows

SCA NuTec has completed a £2 million development in a new blending facility for the feed industry at its Dalton site, Thirsk, North Yorkshire. The investment includes a new dry powder blending plant that will produce premixes and minerals for inclusion in pig and ruminant diets as well as a dedicated tote production plant for specialist high value products for the pet and equine sectors.

An important feature in the dry powder blending plant is the advanced quality control systems. Cross contamination is minimised through an automated process control, bar coded raw material intake and batch traceability.

"We now have a highly efficient and up-to-date plant that goes beyond the required legislative requirements and offers high quality assurance to our customers," says SCA NuTec commercial manager Joe Edge.



SCA NuTec has two manufacturing sites in the UK. This latest development is part of restructuring the UK operation that consolidates animal nutrition activities at Dalton and the production of animal health products at its Lichfield site.

"Products from the new plant can be manufactured to customers' specific formulations and we can offer greater flexibility in production.

The tote plant, for example, has packing options from 5 to 25kg bags through to 1000kg tote bags, and the new blending plant is capable of producing 20,000 tonnes of premixes and minerals a year in single eight-hour shifts," adds Mr Edge.

# Mineral alert

High levels of some minerals in this year's grass silage will cause concern for some this winter unless they are carefully balanced and any deficiencies are met through supplements.

Figures 1 and 2 show that the average potassium level remains high and the dietary cation-anion balance (DCAB) has reached record heights. Molybdenum remains a significant 'challenge' to available copper - the status of which continues to decline.

"High mineral levels can lead to problems," says SCA NuTec's Norman Downey. "Copper deficiency can lead to poor fertility and oxidative stress, from high DCAB levels, brings calving problems, fertility and production problems in early lactation."

Mr Downey's advice to producers is to make sure silage is analysed regularly and minerals are given special attention. "Producers should look to get their silage analysed and the results interpreted carefully then the results used to formulate the correct minerals to meet the cows' specific demands. Our SCA nutritionists are handling the whole package for producers and making sure that the complete ration – including minerals – is correctly balanced.

"It's not advisable to simply re-order the same minerals as last year. There's plenty of opportunity to get a bespoke mix of minerals that will make sure cows gets precisely what they require."

Figure 1. Potassium

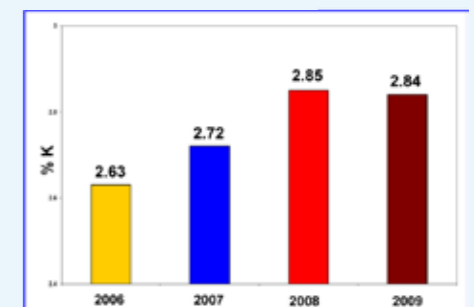


Figure 2. DCAB

