

Industry focus on dietary fat can also benefit cow health

Low sat fat milk offers cow benefits

Through managing fatty acids in dairy rations, saturated fat in milk can be reduced. As well as possible benefits to human health, this can also improve cow health. This set the theme for a recent seminar organised by National Milk Laboratories (NML) with the University of Reading and Dairy UK. We look at the positive implications for producers.

text **Karen Wright**

In a drive to reduce saturated fat in human diets the FSA has recommended that 11% of total energy comes from this fat – a reduction from the current 13.7% average. The dairy industry has a part to play in this as dairy products are the main source of saturated fat in the human diet.

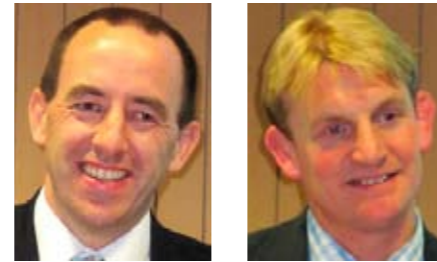
Saturated fat profiles are complex and not all milk has the same profile. There is significant variation – milk from spring grass is lower in saturated fats but this can fluctuate quickly as shown in Figure 1. “There are also regional variations and differences depending on management systems,” said NML director Ben Bartlett. “We’re now using infra-red technology, which can pick up the key fatty acids in milk samples, and we’re building up a database of trends. This data is supporting research and trial work and it will become increasingly valuable

to the industry and on-farm advisers.” A more constant fatty acid profile, such as that seen in milk produced from spring grass, could well be the target for the dairy industry in future. Work has already shown that the fatty acid profile in milk can be adjusted relatively easily through feeding. And in France trial and development work has already resulted in a range of low saturated fat dairy products. These are delivered from a pool of producers who feed their herds a specific ration that produces the required milk.

Cow benefits

Of equal interest to producers is the potential health and fertility effects on cows of feeding a diet that produces milk with lower ratios of saturated to unsaturated fat.

James Husband from the University of



Ben Bartlett

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Nottingham and a director of Evidence Based Veterinary Consultancy has carried out trials in herds fed on diets feeding a high proportion of maize silage and soya with extruded linseed added.

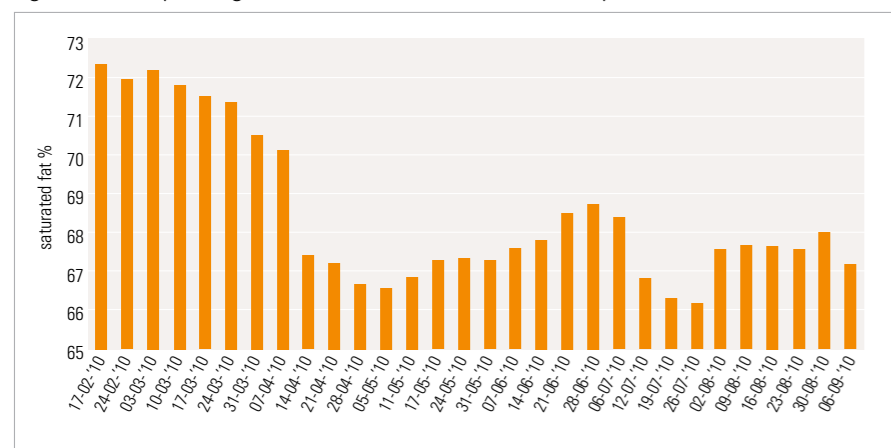
Adding the linseed increases the C18 omega 3 fatty acids and emulates spring

grass – spring grass has a higher content of short chain (C18) omega 3 fatty acids than forages and typically leads to milk production with a profile of lower saturated fatty acids and higher polyunsaturated fatty acids (PUFAs). Spring grass has also been shown to convey beneficial effects on rumen health, and on liver function and fertility in early lactation cows.

“Manipulating fatty acid contents of rations towards this ‘spring grass’ blueprint may bring similar benefits,” said James Husband. “Oilseeds will generally have a favourable effect and we have seen that linseed in particular has a similar fatty acid profile to spring grass and can be used to redress the high



Figure 1: Weekly averages of saturated fat as a % of total fatty acids



Infra red – a new tool in fatty acid profiling

The availability of fatty acid profiling using infra-red technology offers speed, cost and ease of use advantages. Operated through NML’s laboratories, typically on behalf of producers but at the request of advisers, vets and milk buyers, no further sampling is required and results can be back to producers and any nominated third party through the web-based service Herd Companion. This testing capability is being used to support research projects.

NML is a partner in a University of Reading and BBSRC project and will be carrying out the infra red milk tests on samples collected from herds on the project. “This three-year project will look at reducing saturated fatty acids in the food chain through alteration of milk fat composition,” says Mr Bartlett.

“This will start by monitoring fatty acid response to dietary change in commercial herds and the impact of using different oilseeds and rumen protected fat. Milk fatty acid composition will be analysed, as will methane production and cow health and fertility.

“And the infra-red test can be used for individual cow milk samples which will benefit research projects on genetic selection for low saturated fat production cows.”

NML is a subsidiary of NMR and is responsible for testing more than 90% of GB bulk milk samples on behalf of milk buyers for payment purposes. Papers from the seminar ‘Saturated Fat in the Dairy Supply Chain’ are available from the NMR website: www.nmr.co.uk.

omega 6:omega 3 ratios in maize and soya diets.

“Diets with a high omega6:omega 3 ratio lead to increased saturated fats in milk compared with milk from spring grass. Cows evolved on diets with lower omega 6:omega 3 ratios until about 20 years ago when dairy rations started to change. These modern diets may have subtle negative effects on metabolic health and fertility.”

Rumen improvements

Initial UK studies during the past three years have been encouraging. The extruded linseed used has excellent palatability and has shown consistent improvements in rumen function when fed in the ration at a rate of between 0.6 and 1.1kg/head.

“We have used extruded linseed commercially on 13 farms. On three trial farms where the base ration did not change for several months before and during the trial. We saw yield increases of between one and two litres and on one farm conception rate improved from 29% to 41%. There was a fall in fat percentage

of approximately 0.3% to 0.4%, which was partly volume dilution and probably also partly due to the high unsaturated oil content of the linseed suppressing production of saturated fat in the mammary gland.

“Published research work has already shown that more fine tuning of dietary fat will bring greater benefits to cow health and fertility and can lead to reductions in methane emissions per litre of milk produced, as well as the potential for significantly dropping the saturated fat and increasing the omega 3 content of the milk,” adds Mr Husband.

So while the dairy industry may feel under the spotlight in terms of its contribution of saturated fat in the human diet, there may be advantages in taking a proactive approach. “There’s a real prospect that we can achieve a more consistent fatty acid profile in milk that can bring advantages to our dairy herd and to human health,” adds Mr Bartlett. “There’s a lot more work to do but the outlook is promising given research findings so far and the supporting NML milk testing and data.”