

> Global News

Categories: Corporate News | Dairy News

REVIEW: The Key Findings of DSM's Third Ruminant Symposium

Source: Feedinfo News Service
(dated 19/07/2010)

July 19 2010 - More than 120 delegates, comprising nutritionists, vets and dairy advisers attended DSM's European Ruminant Symposium held recently in Ghent, Belgium.

The key theme of the day was how to increase efficiency and the economics of milk production. Today, Feedinfo News Service reviews and publishes the symposium's key findings.

There's more to maximising milk production efficiency than ration formulation. So says US-based dairy specialist Bill Weiss, from The Ohio State University. He shared his five steps to feed efficiency with delegates at DSM's ruminant symposium.

"Producers should be focusing on the feed conversion efficiency of their herds or, in simple terms, milk produced divided by feed intake," he said.

"While the theory that high intakes mean high milk yields and good efficiency is still generally true, there are situations where increased intakes can have a marginal negative effect on efficiency."

Feed usually represents the largest single expense of producing milk and dairy business profitability often depends on how well feed costs are controlled.

Feed costs

"The single best expression of overall feed costs is total money spent on feed for a farm divided by amount of milk produced," said Dr Weiss, adding that there were five major factors affecting feed costs.

Ingredient selection was the first on his list and he stressed that the decision to include an ingredient in a diet should be based on the cost of nutrients and on less tangible factors such as quality control, consistency, technical support, and 'non-nutrient' benefits of a certain feeds. "A cheap ingredient that increases milk yield does not reduce feed cost per unit of milk."

Feed additives were his second consideration. "Many additives are available and can add substantial costs to a diet. So make sure that the additive is really needed and that its benefits outweigh its costs."

Third on the list came herd structure, since milk sales have to pay for all the feed fed to replacements and dry cows. "Herds that have high cull rates and high age at first calving require more heifers, which in turn will

"A cheap ingredient that increases milk yield does not reduce feed cost per unit of milk. Many additives are available and can add substantial costs to a diet. So make sure that the additive is really needed and that its benefits outweigh its costs."

- **Dr Bill Weiss**,
Dairy Specialist
The Ohio State University

increase feed costs," he explained.

Ration specification

Ration specifications also play a key role in determining feed costs. Diets are usually formulated for a group of cows, rather than a single cow. "So make sure that the diet specifications, such as the concentration of protein or energy, are appropriate for the group. And remember that 'over-formulation' often increases costs but 'under-formulation' can reduce milk yield. It's about striking the right balance."

And finally, the area where there really are no excuses for getting it wrong was feed waste and spoilage. "Feed that is wasted or spoiled costs the same as feed that is actually fed to the cows," is how Dr Weiss made his point.

"So controlling feed costs is about so much more than simply buying cheap ingredients, although ingredient selection is important. Raising heifers to calve at between 22 and 24 months and not having a prolonged dry period will reduce the amount of money spent to feed 'unproductive units'."

Shop around

He advised producers to 'shop for nutrients' and take advantage of local markets. "Find out if you live near an ethanol plant, for example."

And another important factor was to formulate diets for 'reasonable' production goals. "If factors, such as poor facilities, limit production rather than diet, do not waste money feeding for production that is not obtainable." He cited inadequate feed fence space or a poorly designed feed bunker as typical problem areas on some units, which no amount of ration formulation would overcome.

"Grouping cows based on stage of lactation and to a lesser extent parity will reduce feed costs by reducing over formulation," he added.

Another way to help get more milk from feed is to add a commercial blend of essential oil compounds to cow rations. "This significantly decreased rumen ammonia production in cattle. And specialised hyper-ammonia producing (HAP) bacteria are key to the effectiveness of essential oils in controlling ruminant protein breakdown," explained the University of Aberdeen's John Wallace.

He has carried out extensive research on the benefits of adding essential oil compounds – in the form of CRINA Ruminants – to ruminant rations. And he shared the highlights of his work with delegates the symposium.

Plant extracts

"The threat to human health associated with the use of antibiotic and chemical feed additives in animal feed has prompted legislation in the EU to ban antimicrobial growth promoters (AGP), such as monensin, and has accelerated investigations into plants and their extracts as feed additives," said the Rowett Institute of Nutrition and Health's Professor Wallace, sharing the rationale behind his work.

The broad potential of plants and their extracts to replace AGP is illustrated by the progress of an EC Framework 5 project, 'Rumen-up' and its Framework 6 successor, 'Replace'.

The 'Rumen-up' project began with a targeted worldwide collection of 500 plants and their extracts, and partners tested their effects on ruminal proteolysis, protozoa, methanogenesis and lactate production. "A success rate of about 5% in terms of positive hits illustrated that

"The threat to human health associated with the use of antibiotic and chemical feed additives in animal feed has prompted legislation in the EU to ban antimicrobial growth promoters (AGP), such as monensin, and has accelerated investigations into plants and their extracts as feed

phytochemicals have great potential as 'natural' manipulators of rumen fermentation, to the potential benefit of the livestock producer and the environment," he said.

Formulating high yielding cow rations that have a low environmental impact – and therefore minimise waste and increase efficiency – is also possible, according to Dr Weiss. "In fact a 20% reduction in emissions is possible. And this is a substantial reduction – it's well worth the effort," he says

additives,"

- Prof John Wallace,
Rowett Institute
University of Aberdeen

Manure facts

The average lactating dairy cow, producing 30kg of milk per day, produces about 70kg of manure per day but manure output is affected by numerous factors.

"Studies have revealed that increasing the concentration of maize silage and reducing the concentration of grass silage substantially reduces manure output," he said.

Replacing dietary fiber with starch decreases manure output, as does feeding more digestible ingredients – such as highly digestible maize silage hybrids and immature hay crop forages.

Strong correlation

So how does the relationships between manure production and intake and milk production work? Manure output and dry matter intake (DMI) are strongly correlated but significant variation still occurs.

"In our data set, manure output varied by about 35kg per day within a specific DMI. On average, manure output increased about 3kg/kg of DMI but this relationship was not constant," said Dr Weiss.

Milk production and manure output were also correlated but the relationship was not strong "This means that we can increase milk production without necessarily increasing manure output. Indeed, because cows produce manure even when they are not lactating – between 30kg and 45kg per day – high producing cows usually produce less manure per kilogramme of milk than do low producing cows."

Dr Weiss added that dietary factors offered the best solution to reducing manure output. "With some simple dietary manipulations, manure output by lactating cows can be reduced substantially.

"For example switching from a diet that is high in grass-based forage, moderately low in starch and moderately high in NDF, and high in crude protein to a diet that is high in maize silage, contains 75% grass silage and is moderately high, but not excessive, in starch and moderate in crude protein can reduce manure output by between 15% and 20%.

"This may not result in reduced excretion of nitrogen and phosphorus, which are the regulated nutrients, but will reduce the storage and handling cost of manure. And these dietary changes should not influence milk production if done correctly."