## Does your herd's ration pass the acid test? **'Buffer' feeding**

What are you doing to keep acidosis under control this winter? We spoke to two nutritional experts to find out why 2009/2010 could be a 'problem' year and what producers can do to maintain a stable rumen pH.

text Rachael Porter

With many grass silages containing high levels of lactic acid and low-cost cereals encouraging more high-starch grains to be fed, dairy units will have to work hard to keep acidosis under control this winter, according to KW nutritionist Richard Wynn.

"Add those factors to rations often already high in starchy maize or whole-crop silages, and the potential to create acidosis is huge," he says. "Too often the result is an acid overload in the rumen and a drop-off in performance when the original aim was to actually increase output and profit."

Many dairy cows will be suffering from acidosis to a lesser or greater extent this winter. Dr Wynn urges producers to take steps to reduce the problem and to be vigilant about the tell tale signs that the problem may be present.

"The rumen is the engine of dairy cow production, containing 130 litres of liquor with 11,000 million microbes/ml," says NWF technical manager Tom Hough.

If the microbes can't perform then nor will the cows, as they provide at least three quarters of the protein and energy needs of the cow.

"One of the most important factors affecting rumen performance is the pH," he says.

"If the rumen pH drops below 6.0 the activity of fibre digesting bacteria will start to be reduced, leading to reduced feed utilisation and feed intakes. The longer the period at low pH and the larger the fall in pH, the greater the impact on performance." Cows are diagnosed as suffering from clinical acidosis when the pH of the rumen falls to less than 5.5. The fall in pH has two effects.

"First, the rumen stops moving which depresses appetite and production. Second, the change in acidity changes the rumen flora, with acid-producing bacteria taking over. They produce more acid, making the acidosis worse."

## Rumen pH

"In many cases cows will suffer from sub-acute rumen acidosis (SARA) when the fall in rumen pH is smaller or lasts for a shorter time," adds Mr Hough.

Table 1 sets out a method used by KW for assessing a herd's overall acidosis risk, with a total score of nine or more indicating a clear threat to cow health and productivity. Typical symptoms of acidosis include a drop-off in milk yield, reduced 'cud chewing', variable feed intakes, and dung that is either loose or contains undigested grains.

During longer periods of acidosis, cows will also tend to show higher levels of lameness.

Prevention is cheaper than cure and Mr Hough urges producers to take care with both the chemical and physical composition of the diet.

"Acidosis is more of a problem when

Table 1: Rumen stability assessment table



Richard Wynn

high levels of rapidly fermented starches and sugars are fed, particularly if fed in large meals. These feeds produce a surge in VFA production, which leads to the fall in pH."

To reduce the risk of developing acidic rumen conditions, care should be taken with how the diet is formulated.

"Ensure there is adequate long fibre available to stimulate cudding and the production of saliva, which will naturally buffer rumen pH," says Dr Wynn.

"Include a minimum of 0.5kg/cow/day of chopped wheat straw – between 5cm and 6cm in length – to supply structural fibre.

"And then use high energy and high digestible fibre feeds, like sugar beet feed and sometimes soya hulls, to lift digestible fibre levels without reducing overall ration energy density.

"Aim for a ration NDF:starch-plus-sugars ratio of around 1.6:1 wherever possible."

Some herds will be in the 'high risk' or 'very high risk' categories for acidosis (see table 1) even with the correct level of straw and digestible fibre in the ration, particularly where average milk yields are above 8,000 litres. "And this is the reason why the use of yeasts and rumen buffers has become increasingly popular, with a payback in terms of improved production of up to 6:1 in early lactation," says Dr Wynn.

Yeasts tend to be used when feeding highly fermentable diets, such as highstarch and high-concentrate rations.

	level of acidosis risk			
	low (score = 1)	medium (score = 2)	high (score = 3)	score
actation yield (litres/cow)	<6,500	6,500-8,000	>8,000	
dry matter intake (kg/cow/day)	<20	20-23	>23	
% concentrates in ration (DM basis)	<40	40-60	>60	
undigested grain or fibre in dung	low	medium	high	
cereal/maize silage as % total forage	<25	25-45	>45	
grass silage PAL* (meq/kg)	<850	850-1,000	>1,000	
total score**				

\* PAL = Potential Acid Loading

\*\* total score: <8 = low risk; 9-12 = high risk; >12 = very high risk. (Source: AB Vista)



## Tom Hough

They help to discourage the bacteria that produce lactic acid and cause acidosis while at the same time encouraging the beneficial fibre-digesting microbes.

But slow-release buffers, such as AcidBuf, act primarily to counteract the acidity of low pH, highly acidic silages, with many companies offering products containing both yeasts and rumen buffers, such as Vistacell AB.

"Short-term improvements in feed intakes, dung consistency, cudding and 'contentment' are usually seen within a few weeks of adding a yeast, like Vistacell, to the ration," says Dr Wynn.

## **Yield increases**

"Other benefits are a reducing in the daily variation in bulk tank volumes and yield increases of around two litres per cow per day," he continues. "For a cost of around six pence per cow per day, it's a payback of up to 6:1 that makes a lot of sense when the risks of acidosis are high."

Tom Hough says that some producers also fail to pay enough attention to the physical nature of the diet and its affect on rumen function.

"In the same way that the rumen needs a range of energy and protein sources with different fermentation rates to maximise performance, so it also needs a balance of different particle sizes," he says.

If a diet contains too many long particles the effect will be to slow down the rate of digestion.

If the ration contains too many fine particles the outcome will be a rapid fermentation and the onset of acidosis.

Recent research shows that many diets are poorly mixed and are also prone to sorting which allows cows to select out the finer material, putting themselves at risk of acidosis.

"So sieving a diet, using a Penn State Separator, and skilled interpretation of the results is a sure fire way to assess whether a diet is in the correct physical form to help reduce the risk of acidosis," he adds.

