



KW ALTERNATIVE FEEDS: LONG ARTICLE

Driving feed efficiency and milk value on farm

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The benefit of using either a live yeast or slow-release rumen conditioner to help minimise sub-acute ruminal acidosis (SARA) is widely recognised, particularly when silages are acidic or high levels of rapidly fermentable starch are being fed. Yet the latest research shows that feeding both can have an even greater impact, further increasing the efficiency with which feed is converted into milk, and potentially lifting both butterfat production and milk value.

“The research was conducted at Schothorst Feed Research (SFR) in the Netherlands,” states KW nutritionist Mark Scott. “And the results demonstrate a clear gain in feed efficiency when combining a live yeast and a slow-release rumen conditioner compared to using the yeast on its own.

“So whether this approach is used to get more out of the same feeds – by increasing milk output and income – or to produce the same output from less feed, the net result should be an increase in income over feed costs (IOFC).

“At a time when maximising milk value and profitability is critical, that’s great news for milk producers.”

Improved rumen function

According to the data generated by SFR, the gain in feed efficiency was due to improvements in rumen function that followed a reduction in the level of lactic acid produced when feed was fermented. The result was a more stable rumen pH, leading to increased fibre digestion and higher levels of the beneficial volatile fatty acids (VFAs), such as acetate and butyrate.

“Lactic acid is the strongest acid produced during rumen fermentation, and is believed to be the acid most responsible for reducing rumen pH and inducing SARA,” Mr Scott explains. “In addition, more acetate and butyrate generally means greater butterfat production and a higher fat-corrected yield, which is what was seen during the trial.”

The Holstein Friesians used in the study were fed a typical 65:35 forage-to-concentrate ratio diet that comprised grass silage, maize silage and a wheat-based concentrate fed in the parlour. During the trial, the ration was fed either unsupplemented (control), or with the addition of a metabolically active yeast (Vistacell 4% at 100g/cow/day) or a combination product (Vistacell AB at 100g/cow/day) containing the yeast and a slow-release rumen conditioner (Acid Buf), as shown in table 1.





Table 1: Details of diet supplementation used in the trial

	Live yeast (g/day)	Rumen conditioner¹ (g/day)	Limestone flour (g/day)
Control	-	-	100
Yeast (Vistacell)	4	-	96
Yeast plus conditioner (Vistacell AB)	4	88	8

¹ Acid Buf marine algae-based slow-release rumen conditioner

The results are shown in table 2. Compared to the control, the live yeast alone improved performance by lifting dry matter intake, as well as milk yield and butterfat production. However, the combination of the live yeast plus rumen conditioner produced both a further increase in butterfat production and an improvement in feed efficiency, resulting in a similar milk yield to the yeast on it's own but for less dry matter intake.

“In fact, the change in milk fat production equated to an increase from 3.89% butterfat in the control to 4.18% where Vistacell was used alone, and rising to 4.53% for Vistacell AB,” Mr Scott adds. “With less feed consumed, that’s a substantial gain in feed efficiency, and is a direct consequence of improved rumen function due to greater control of rumen pH.

“Remember that a highly effective slow-release rumen conditioner like Acid Buf has up to five times the buffering capacity of sodium bicarbonate.”

Table 2: Effect Vistacell AB on milk production and feed efficiency in lactating dairy cows

	Control	Yeast only¹	Yeast plus conditioner²
Dry matter intake (kg/day)	23.4	24.2	23.6
Fat-corrected milk yield (FCM, kg/day)	37.1	38.6	38.9
Butterfat production (kg/day)	1.46	1.58	1.65
Feed efficiency (kg FCM/ kg DMI)	1.59	1.60	1.65

¹ Vistacell at 4g/cow/day

² Vistacell AB = Vistacell at 4g/cow/d + Acid Buf at 88g/cow/day

Source: Schothorst Feed Research

Maximising fibre digestion

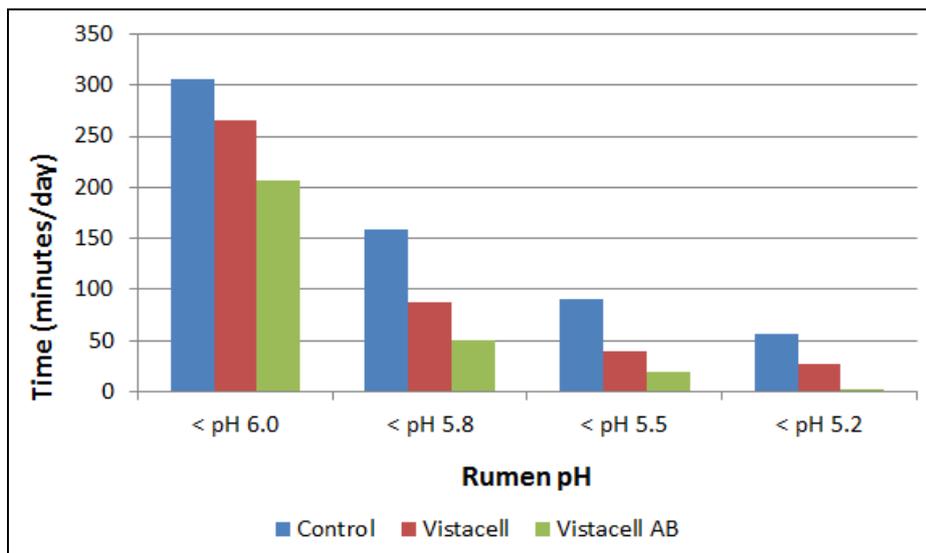
The VFAs produced when fibre digestion in the rumen is working well (specifically acetate and butyrate), and which drive butterfat content, are weaker (less acidic) than the lactic acid produced when starch is fermented. The result is a rumen environment that’s closer to the ideal pH 6 and much better for the majority of the rumen microbes, especially those responsible for fibre digestion.

However, whenever rumen pH falls below 5.8 – such as when high levels of starch are fed – fibre digestion is reduced, with knock-on negative effects for the production of acetate and butyrate, and butterfat. The challenge is that for the majority of cows, dips in rumen pH down to 5.8 or less occur regularly through the day, regardless of the feeding system or ration used.





“The key is to minimise the amount of time the rumen spends below pH5.8, and especially the time below pH5.5, which is the threshold for sub-acute ruminal acidosis (SARA),” Mr Scott continues. “As can be seen in the graph in figure 1, although the live yeast alone substantially reduced the time rumen content spent at low pHs, the effect was even more pronounced when the rumen conditioner was also included.”



Source: Schothorst Feed Research, 2014

Figure 1: Effect of Vistacell AB on rumen pH in lactating dairy cows

“So it’s no longer a question of whether a yeast or a rumen conditioner will be the best option to help maintain the good rumen conditions needed to drive milk production and lift milk quality. We now know that there’s a benefit to using both at the same time, and it’s an opportunity which will become even more significant as milk buyers increasingly look to reward producers for milk solids rather than just litres alone.”

Ends

List of feeds:

Vistacell (metabolically active yeast)

Vistacell AB (metabolically active yeast + slow-release rumen conditioner)

Acid Buf (slow-release rumen conditioner)



0845 355 9935
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