

Not-So-Good Vibrations - Reducing Somatic Cell Counts

When you switch on milking machines in your parlour, you could also be switching on a factor contributing to elevated somatic cell counts.

When looking at an overall strategy to reduce your herd's somatic cell count [SCC], consider vibrations your cows feel from milking machines. While it's just one of many factors influencing udder health, Swiss researchers have found that reduced vibrations can contribute to a lower SCC.

Previous research has shown that excessive noise during handling increases heart rates and stress levels in beef cattle. This has been accepted as the animals' natural fear response. Recently, scientists have speculated about whether noise influences dairy cows, impacting udder health, production and milk quality.

The Swiss researchers studied two types of sonic waves and their effect on production and health of dairy herds in parlours. Structure-borne waves are vibrations the cows feel from the milking machine. They feel airborne waves from the actual noise generated by the milking machine and associated equipment.

Bulk tank samples for the year before the study were averaged for herd SCC and then measured for three months after milking systems were modified to lower sonic wave amplitude, or size. The researchers believed that the larger the sonic wave amplitude, the greater the effect on cow health. They also considered several variables when analysing the effect of vibration and noise on SCC but focused on parlour style as having the most influence on these waves.

Different parlour styles were measured for the presence of these two types of sonic waves, including herringbone, autotandem, side-by-side and carousel, with herringbone parlours most common on Swiss dairy farms. Regardless of parlour style, researchers observed a reduced SCC on every farm in the study after milk equipment modifications.

However, the effect of vibrations, or structure-borne waves, proved to influence SCCs more than noise, or airborne waves. Previous studies had found no evidence that noise impacted cow health or production but they observed only noise, not simultaneous vibrations. In the Swiss study, parlour modifications reduced vibrations to a greater degree than noise.

As the figure on page 38 shows, vibration reduction did correlate with improved herd SCCs. The researchers believe a few factors could explain this.

The first was oxytocin response, which allows the udder to let down milk. A cow releases this hormone at milking through physical stimulation of the teats from cleaning before unit attachment and by the milking machine. Increased vibration from the machine to the cow may cause significant stress that could reduce oxytocin levels and milk yields. This would have a domino effect, raising the mastitis risk from residual milk in the udder and elevating the SCC.

Another factor the researchers assessed was vacuum stability resulting from the milking system modifications. A more stable vacuum reduces milk droplet impact on the teat end, further reducing mastitis risk.

Management practices were also considered a factor that would impact SCC before and after modifications. The study included different management practices at all levels. It found that even with large vibrations associated with poor management practices, it was difficult to observe the vibration level without using measuring equipment. The researchers concluded that even the best management practices might be unable to identify a vibration problem without proper measurement of structure-borne waves.

While the Swiss study showed how vibrations can influence SCC, you have to look at several factors when assessing an SCC reduction strategy for your herd. At the individual cow level, mastitis history, breed, yield and parity would have to be considered. Items such as machine settings, environmental factors, and teat cleaning and stimulation routines are also important to the big picture. And, of course, management practices play a huge role in your herd's overall health and production.

Before calling in your equipment dealer for a complete system overhaul, evaluate your herd's performance and health. Make sure you keep your milking system maintained and at the appropriate vacuum and pulsator settings. If your herd SCC still needs improvement, have your equipment dealer or udder health specialist assess your milking system. See if you can make improvements to reduce the impact from vibration as part of the SCC reduction strategy.

Reference:

Gygax, L. and D. Nosal. "Contribution of Vibration and Noise During Milking to the Somatic Cell Count of Milk", *J. Dairy Sci.*, 89:2499-2502.

This article first appeared in the Ruminations column of The Milk Producer Magazine, September, 2006.