

CRYSTALYX® Dairy Review




What Every Dairyman Should Know About Subacute Ruminal Acidosis (SARA)

Six months after Subacute Ruminal Acidosis (SARA) struck his large Idaho dairy herd, Reagan Hatch still vividly remembers how painful the experience was. He likens it to a wreck, but a wreck in which the total amount of damage isn't immediately obvious.

"Acidosis can be very subtle," Hatch said.

First the herd suffered from a huge drop in milk production, particularly among the mid- to late-lactation cows. Then, three months later laminitis struck and reproduction rates fell. Hatch noticed that some of the cows seemed to handle the bout with acidosis just fine, while others never recovered from it.

"It has an effect on all the biological systems of the cow," Hatch said.

Fifteen years ago, acidosis wasn't recognized as a problem on dairies. But rations have changed dramatically in recent years as dairy producers strive to maximize production. "We're pushing the cows to the edge," Hatch said. "You don't know where the edge is, but you know when you've crossed it."

Hatch's experience with SARA echoes the findings from the U.S. Dairy Forage Research Center in Prairie du Sac, Wisconsin.

HOW SARA OCCURS

Gary Oetzel, an associate professor with the School of Veterinary Medicine at the University of Wisconsin-Madison, has been studying ruminal acidosis in dairy cows for the last decade. He estimates that 20 to 25 percent of the dairy herds in the Upper Midwest have subacute acidosis. "We think it's probably the most costly disease condition in the dairy industry today," Oetzel said.

SARA is simply a condition in which the pH is too low in the dairy cow's rumen. The pH never stays too low for a long period of time because the cow has a built-in self-correcting system. Once the rumen pH drops too low, the cow

receives a signal to quit eating. Once the cow slows her eating, or stops completely, she quits putting grain or other feedstuffs in the rumen that might ferment and turn to acid, and the pH level begins to recover.

Although the actual time the rumen pH is too low (too low being less than 5.5) is brief, the consequences can be devastating: a drop in feed intake that can lead to decreased milk production in the short-term, and potential health problems later.

And it takes more than one bout of low ruminal pH to create the problem. Oetzel believes repeated insults over time, perhaps weeks to months, lead to the health problems. "The health problems can be considered chronic, but the episodes of low ruminal pH would fit into what we call the subacute category," he explained.

EFFECTS OF SARA ON YOUR HERD

On an individual cow basis, it's hard to pick out which cows are suffering from SARA. Most producers notice the problem on a whole herd scale, when a pattern of health problems has time to develop. Oetzel said the first sign is often low milk production even though the diet appears to have plenty of grain and energy.

Another consistent feature of the disease is high cull rates. When you ask a producer why the cow left the herd, the answer is often vague: she was thin, she didn't breed back, and she was lame. These culling reasons are typical for dairy herds with ruminal acidosis problems. Affected herds may also have problems with liver abscesses, but these are usually undetected until the cow dies or goes to slaughter.

Oetzel estimates that an individual cow may need at least one dry period to recover from SARA. Herds that have suffered moderate to severe episodes typically take a year or more to recover.

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"A BIG BOOST IN CONTROLLING MY MILK FEVERS."

Chad Wieneke
Adrian, MN

Chad Wieneke, along with his father and brother, milk 225 cows near Adrian, MN. He's relied on DAIRY-LYX® and CLOSE UP FORMULA™ to supplement his nutrition program.

The Wienekes experienced a significant decrease in milk butterfat and protein content during a prolonged period of extreme heat and humidity. "We put DAIRY-LYX® in the loafing barn and brought our butterfat to 3.5, and it held steady throughout the rest of that very hot summer. Since then we use it year-round in the barn," Chad explained.

They feed CLOSE UP FORMULA™ to dry cows in outside lots. Chad indicates he's found an easy way to control milk fever. "I've tried to feed anionic salts straight out and had a lot of trouble with losing intakes. CRYSTALYX® CLOSE UP FORMULA™ is a big boost in controlling my milk fevers," he said.



"While the impacts of SARA can be economically devastating, producers should be aiming to control and manage - not eliminate - the condition.

"We think almost every herd has some cows with low ruminal pH. In fact, if you don't have a few cows in this subacute acidosis range you're probably not feeding them enough grain," Oetzel said.

"The way to get milk out of dairy cows is to get them as absolutely close to ruminal acidosis as possible. Because we want to maximize milk yield, we want to maximize feeding grains. But we just can't go over that line. And it's very hard to know whether you're over or not," Oetzel said.

Producers often turn to buffers in the diet to help control acidosis problems. But that can be expensive and sometimes ineffective. Putting the buffer in the ration can be expensive because it's being fed to all cows, regardless of whether or not they have acidosis. Feeding a free-choice buffer may be less expensive, but there's no way of knowing if a cow that needed the buffer actually consumed it.

"When you see a cow who's not eating in the barn, she doesn't have ruminal acidosis now. She may have had it twelve hours ago," Oetzel said. "So we need to have systems where cows get access to buffers, in a sense even before they need them, so that they get the buffering capacity on board before they get the message that 'Whoa, my rumen pH is too low, I've got to stop eating.' Because that's bad news."

That's why Oetzel conducted replicated studies in 2002 and 2004 evaluating bicarbonate incorporated into BUFFER-LYX™, a low moisture molasses block. Mixing the bicarbonate with molasses helps mask the flavor of the bicarbonate while encouraging free choice consumption.

2002 & 2004 SARA / BUFFER-LYX™ STUDY

Eight ruminally cannulated lactating dairy cows were evaluated during a 12-day study in 2002 with first lactation heifers and then in 2004 with mature dairy cows. Half the cows had access to specifically formulated BUFFER-LYX™ blocks, half did not.

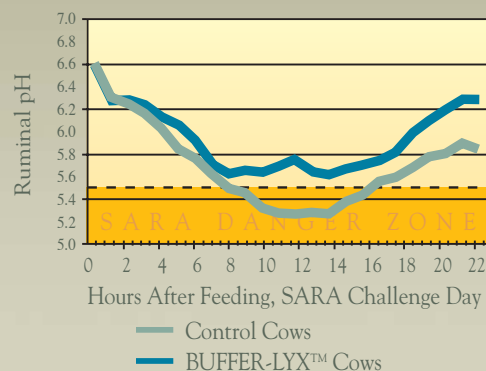
To make sure the cows had SARA, they were fed normal rations for several days and then one day they received only half their normal feed. The next day



Dr. Gary Oetzel,
DVM, MS

RUMINAL pH, SARA CHALLENGE TEST RESULTS

Cows that are fed a diet that will lead to SARA will initially respond much the same as they would in the early stages of ruminal fermentation. Once the major portion of the diet is consumed however, cows that were offered BUFFER-LYX™ handled the increased acid load much better because BUFFER-LYX™ minimized the time cows spend below a pH of



5.5. In fact, when compared to cows that did not receive BUFFER-LYX™, they moved to a higher pH more quickly. The pH of cows that were fed a diet conducive to SARA and not offered BUFFER-LYX™ stayed below 5.5 for a considerably longer time. When diets or feeding conditions that can lead to acidosis occur, supplementing with BUFFER-LYX™ appears to help cows recover from SARA and keep fermentation within a more desirable range.

they were fed a normal ration spiked with pelleted wheat and barley. Wheat and barley were selected because both are highly fermentable grains that were sure to send ruminal pH plummeting. All of the cows had some degree of SARA following that challenge, and in some cows ruminal pH dropped dramatically.

While all the cows in both groups quit eating after the SARA challenge, the group that had access to BUFFER-LYX[™] did not lower their ruminal pH as much. They also got back to their normal pH more quickly than the cows that didn't have access to the buffer.

That's despite the fact that the cows that had access to BUFFER-LYX[™] did not go to those blocks once they quit eating. Researchers have proven that cows do not go to free choice sodium bicarbonate either once they receive the signal to quit eating.

MANAGING SARA WITH BUFFER-LYX[™]

But Oetzel did observe one way that dairy producers could use BUFFER-LYX[™] to help manage SARA. He noticed that the cows who had their full feed available consumed between .40 and one pound of the low moisture block daily. But the day that feed was limited, they increased their consumption of the BUFFER-LYX[™] block.

Knowing that the cows will utilize BUFFER-LYX[™] when feed is limited is useful for producers because there are times in dairy herds where the cows are denied access to their full feed, or have significant interruptions.

"If the cows have access to BUFFER-LYX[™] they can go to those blocks, consume them, and actually build their buffering capacity in anticipation of a large meal that's going to follow," Oetzel said.

At one-half to one pound of BUFFER-LYX[™] consumption a day, the cow is receiving a significant amount of actual sodium bicarbonate from the blocks - enough to support ruminal pH.

He sees the use of BUFFER-LYX[™] as another tool producers can use to manage SARA along with making sure the ration is fine-tuned. That means making sure everything in the ration is correct - from formulation for fiber to forage particle length to processed grain particle size.

"All of those things have to be done. But we're still going to be right on the line," Oetzel said. Feeding BUFFER-LYX[™] provides a safeguard so cows needing extra buffering have a chance to get that extra buffering.

Oetzel believes acidosis has been a potential problem in dairy herds as long as producers have fed grain to their cows. But as producers breed cows for more and more milk production and then feed rations to optimize that genetic potential, acidosis is going to become a larger problem for dairy producers.

"The higher the level of production, the more likely we are to benefit from feeding strategies that reduce the risk for acidosis," he concluded. ♦

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"IT'S HELPING US REACH OUR GOALS."

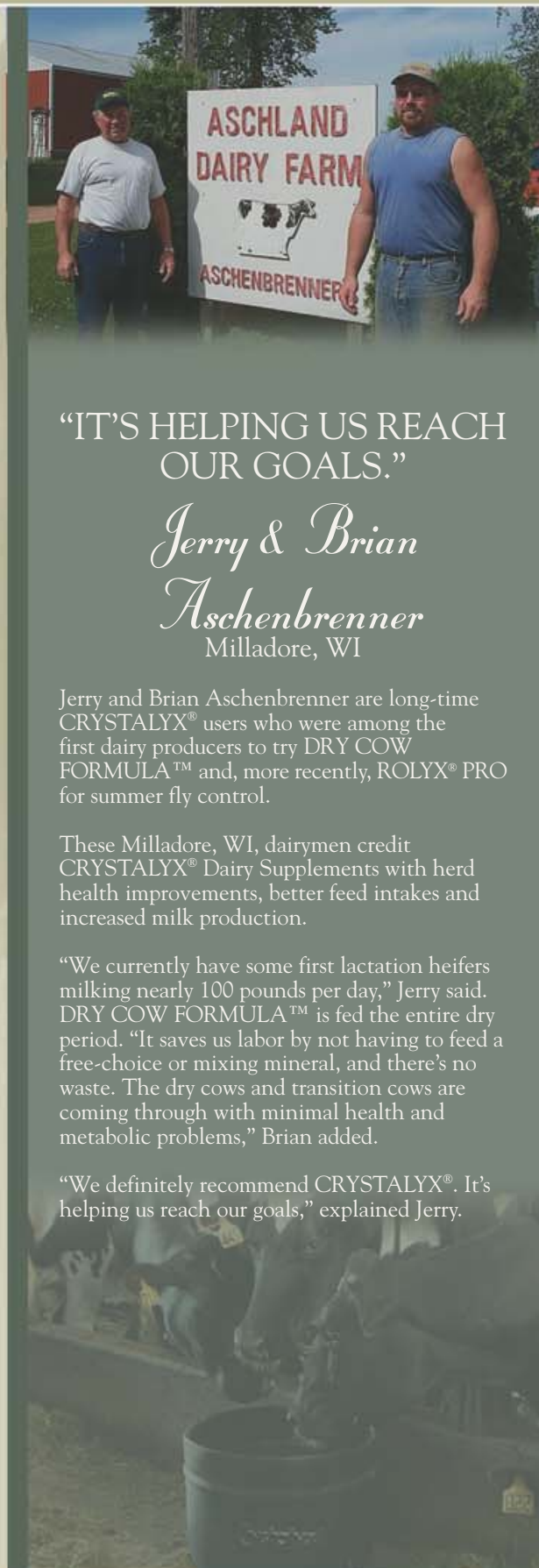
Jerry & Brian
Aschenbrenner
Milladore, WI

Jerry and Brian Aschenbrenner are long-time CRYSTALYX[®] users who were among the first dairy producers to try DRY COW FORMULA[™] and, more recently, ROLYX[®] PRO for summer fly control.

These Milladore, WI, dairymen credit CRYSTALYX[®] Dairy Supplements with herd health improvements, better feed intakes and increased milk production.

"We currently have some first lactation heifers milking nearly 100 pounds per day," Jerry said. DRY COW FORMULA[™] is fed the entire dry period. "It saves us labor by not having to feed a free-choice or mixing mineral, and there's no waste. The dry cows and transition cows are coming through with minimal health and metabolic problems," Brian added.

"We definitely recommend CRYSTALYX[®]. It's helping us reach our goals," explained Jerry.



SO WHAT'S IN THE RUMEN?

Measuring what's happening in an individual cow's rumen is no easy task.

Dr. Gary Oetzel, associate professor with the School of Veterinary Medicine at the University of Wisconsin-Madison, used eight ruminally cannulated cows in 2002 and 2004 to evaluate what effect feeding BUFFER-LYX[™] low moisture molasses blocks with bicarbonate, had on rumen pH. Half the cows had access to BUFFER-LYX[™], half did not. In 2002, all the cows were in their first lactation. Mature cows were used in 2004.

To get the minute-by-minute data he needed, the cows were first ruminally cannulated - that is a hole was put in their side and a plastic plug was inserted. Often researchers will open the plug to collect actual samples from the rumen as the cow is digesting feed. In this case, a pH electrode was also inserted. The electrode was connected to a data acquisition system that collected rumen pH measurements continually and recorded them as one-minute averages.

Cows were housed in individual tie stalls to make it easier to collect the needed data. Wooden feed mangers, designed to hold a full day's amount of total mixed ration, were also fitted with an electronic load cell that was hooked to a second data acquisition system so that feed weights were collected continually. An automatic weighing system was also in place for the BUFFER-LYX[™] blocks.

The schedule for these feeding trials included a three-day baseline period where neither group received BUFFER-LYX[™], a four-day period where the test group received BUFFER-LYX[™] one day where both groups received half the normal amount of feed, a challenge day when a ration designed to induce Subacute Ruminal Acidosis was fed and a three-day recovery period.

Milk yield was automatically weighed and milk samples were tested for fat and protein content at each milking.

Oetzel said these studies showed that cows that received the BUFFER-LYX[™] low moisture blocks tended to consume more dry matter than the control cows during the recovery period of the SARA challenge.

The cows on BUFFER-LYX[™] also had a significantly less drop in mean daily ruminal pH on the ruminal acidosis challenge day. Their ruminal pH also returned to normal more quickly during the recovery period.

These results suggest that BUFFER-LYX[™] was beneficial in helping prevent ruminal acidosis and providing a faster recovery from an acidosis challenge.



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SOMETIMES A TMR ISN'T ENOUGH

Despite best efforts, producers can fall short in providing all essential nutrients, all the time. CRYSTALYX[®] Dairy Supplements create a safety net for your nutrition program. Here's how:

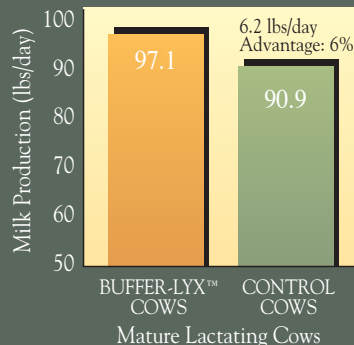
- Available 24/7
- Highly palatable
- Cannot be sorted
- No waste
- Licking action provides additional buffering
- Uniform blend of key nutrients
- Accessible by all cows

Buffer-lyx[™]

Newly designed formulation for high producing, lactating cows to increase milk production and Dry Matter Intake. Contains buffers and alkalinizing ingredients for optimum rumen fermentation and reduced risk of Subacute Ruminal Acidosis (SARA).

MORE MILK WITH BUFFER-LYX[™]

F.A.R.M.E Institute, Homer, NY



A 2003 summer research farm trial shows the effect of BUFFER-LYX[™] on milk production of lactating cows. BUFFER-LYX[™] cows produced 6.2 lbs. or 6% more milk, per-cow, per-day. This study supports findings from a previous on-farm trial that indicated 11% more milk, per-cow, per-day.

Other CRYSTALYX[®] Dairy Supplements available:

Transition Stress[™]
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Dairy-lyx[®]

Close-Up[™]
FORMULA

Replacement Heifer[™]
Formula

Dry Cow[™]
Formula

IONO-LYX[®]
B300

ROL YX[™]
Supplement