

## Somatic Cell Countdown

Conquering mastitis by improving the dairy industry

By **Geoffrey Westfall, DVM**



After milking, some teat dips can leave milk residue on the teat end, which actually feeds mastitis-causing bacteria. Make sure the teat disinfectant you're using removes any residual milk and completely disinfects teats.

From cows to consumer choices, high somatic cell counts (SCCs) negatively affect every segment of the dairy industry. Statistics show that mastitis, an infection of the mammary gland that leads to high SCCs, costs the U.S. dairy industry more than \$2 billion every year. That's preventable profit loss, and it doesn't stop there. Producers can expect about a 5 percent reduction in milk yield with every SCC increase of 50,000 over 200,000, plus the milk won't qualify for higher milk quality premiums.

Then there are the costs for the distribution and consumer markets. Pasteurized and properly refrigerated milk has a shelf life of approximately three weeks before off-flavors can be detected. A study by Dr. Dave Barbano and a team of Cornell University researchers shows pasteurized milk shelf life can be extended significantly by lowering SCC in milk. The researchers compared the shelf lives of low (25,000) and high SCC milk (340,000). Using pasteurized 2% milk, the low SCC milk was free of rancid (fat degradation) off-flavor for 48 days longer than the high SCC milk. They also found a 25-day shelf life advantage in the appearance of bitter and astringent (protein degradation) off-flavors in the low SCC milk. Lowering SCCs is not only better for cows and their owners, it's just plain smart business for the entire industry. The rest of the modernized world seems to agree.

Starting October 1, 2009, the European Union (EU) now requires that U.S. dairy processors that ship products to Europe prove that each of the farms supplying milk for those products show a three-month average SCC lower than 400,000 per milliliter. Previously, processors could combine milk to keep the cell count below 400,000, but now each producer must maintain these standards. Since 10 percent of U.S. milk is shipped to the EU, the change affects U.S. dairies.

### Successfully reducing SCC

As a veterinarian, I've studied mastitis, and how to prevent it, for decades. Though it is caused by many variables, it can be controlled effectively through careful monitoring, assessment and diligent prevention. Producers have less control over some elements that can lead to high SCCs, such as wet weather and genetic predisposition, but all contributing factors can be improved. The three contributing factors are ...

1. milking protocol and equipment;
2. environment; and
3. animal health.

Proper milking protocol is critical. First, milk clean, dry teats. For milking prep, some producers use disinfectant to clean teats while others clean with warm, soapy water. Either way, dry teats with a single-use cloth or soft paper-fiber towel. Using a fresh towel on each cow prevents pathogens from being transmitted from one cow to the next. Make sure your milking team understands the importance of proper cleaning and drying during prep.

It's also important to stimulate the udder and trigger milk letdown during prep. To encourage complete milk-out, attach the milking machine within one minute after teat stimulation. The goal is to time it with the animal's peak oxytocin levels for a faster, more complete milking that aids in mastitis prevention.

As soon as milking units are removed, apply a research-proven teat disinfectant. The goal is to prevent the growth of bacteria in the residue of milk at the teat end. Many producers find that products containing chlorhexidine, as well as those containing high percentages of glycerin or other emollients, are gentler to the teat skin than other products.

Also, have your milking equipment evaluated to make sure it is functioning properly, that liners are not slipping and causing teat end damage, and that equipment is cleaned properly between milkings.

Clean, dry bedding keeps cows comfortable and their udders away from bacteria. Cows also spend more time lying down in a clean environment. This increases blood flow in the udder, directly correlating to greater milk production. Frequent gutter and alley cleaning, proper ventilation and cooling and effective fly control play important roles in controlling mastitis.

Striking the right balance in environment issues can be challenging for producers. Softer surfaces are better for bovine hoof and leg health, but a soil

lot can turn into injury-causing, pathogen-transmitting mud during rainy seasons. Amending soil with firming materials such as clay or sand can help keep SCC counts down.

Improving the overall health of each cow builds stronger immune systems that fight infection better. A nutritionist-approved diet, attention to hoof and leg health, regular herd health checks and a stress-reduced, clean environment all contribute to better milk. Consider using a dry cow treatment on all quarters of all cows. Producers should also work with a veterinarian and administer vaccines to help protect cows from disease. A healthy cow will always give greater quantities of higher-quality milk than a sick cow.

If you are not making progress, identify the problem. By using single bulk tank cultures, monthly bulk tank culture data and individual cow cultures (for both high SCC and suspected subclinical cases), producers can determine which cows are infected and which organisms are responsible. Work closely with your veterinarian and other milk quality team members to tailor a mastitis treatment and prevention plan to fit your herd. Most importantly, be patient. Even highly effective changes can take several months to show accurate, positive results.

If you've done everything you can to prevent mastitis and still have chronically high SCC cows, it may be more economical to cull them rather than keep them in the herd, even if they are high producers. This is especially true in small herds where one or two high SCC cows can really hurt bulk tank counts.

### **International standards**

For nearly 20 years, the National Mastitis Council has recommended that the U.S. improve milk quality standards, while the rest of the modern dairy world has moved forward without us (e.g. 99 percent of all milk produced in Germany has SCC counts below 400,000, according to the Kiel Institute). But, times are changing.

National Milk Producer Federation delegates recently approved a resolution to lower Grade A SCC limits to 400,000 per milliliter by 2014. The proposal will be made at the 2011 National Conference on Interstate Milk Shipments (NCIMS) in April in hope that the NCIMS will approve the change to the Pasteurized Milk Ordinance, which regulates Grade A milk for interstate shipment. The proposal includes a three-step process that begins January 1, 2012, by lowering acceptable SCC levels to 600,000, with a final step of reducing the level to 400,000 on January 1, 2014.

Though the pressure to lower our allowable SCC levels now comes from outside our borders, the change can only improve the American dairy industry. We should view the new standards as an opportunity, an opportunity to improve udder health, produce higher-quality dairy products and spark increased demand for them, and to boost consumer perceptions of dairy as the safe, wholesome food group it is. If our European counterparts can keep improving their milk quality, we certainly can, too.

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