

SOMATIC CELLS

What high SCC mean for health and profits and what to do about it.

Mastitis in dairy cows is classified in several ways: contagious or environmental (depending on how it was transmitted); acute or chronic (depending on length of infection); and clinical or subclinical, which simply means whether or not the infection is obvious to the dairyman. Both clinical and subclinical mastitis affect the dairy's profits, with about 67% of the total economic loss coming from lost milk production, alone.

SCC UNCOVERS "HIDDEN" MASTITIS

Mastitis is considered clinical when signs are present, such as abnormal milk and udder swelling or tenderness. 'Hot' cases display fever, depression, and loss of appetite.

Subclinical mastitis, on the other hand, is a hidden level of infection. One indication is elevated somatic cell count (SCC).

Somatic cells are made up of white blood cells and tissue cells, which circulate normally in the bloodstream. When infection, inflammation, or injury are present, the body sends 'armies' of these cells to the area to protect and repair it.

In this way, high SCC indicates an udder health problem. High SCC also affects the cheese yield and reduces quality and shelf life of fluid milk. That's why milk market premiums and discounts are used to encourage producers to keep SCC low.

Somatic cell counting is a valuable tool to 'visualize' this invisible level of infection and accurately estimate the dairy's losses in production (Table I), components, and quality.

Bulk tank SCC (BTSCC) is useful in monitoring the herd's overall mastitis status. In general, BTSCC below 200,000 cells/ml is considered acceptable. But many herds consistently keep BTSCC below 200,000 and receive good premiums for this milk.

It's also important to monitor SCC of individual cows through Dairy Herd Improvement Association (DHIA) testing.

By identifying cows with high SCC on the DHIA report, the dairyman can make management decisions, such as culturing, treatment, early dryoff, or culling. One way to monitor what's going on in the herd, is to culture selected high-SCC cows and use the results to develop a plan with the herd veterinarian.

Studies at the University of California-Davis, indicate it's often not cost-effective to treat lactating cows based solely on their SCC levels, mainly because certain bacteria that cause elevated SCC, like *Staph aureus*, are somewhat resistant. Culturing these cows helps the dairyman know what he's dealing with.

Early dryoff is one strategy for chronically infected high-count cows. Dryoff as early as 100 days before expected calving date offers an opportunity to fight resistant infections by removing a chronic cow from the herd and using more effective dry cow antibiotics to treat her.

Monitor SCC levels post-calving. This gives clues about what's happening during the dry period. It's good to know what her SCC was at dryoff for comparison. As cows begin to secrete milk, they can spike a temporary rise in SCC, which declines more rapidly in uninfected quarters compared to infected quarters. If a high percentage of the herd is calving-in with persistent high SCC, start a culturing program and take a close look at dry cow management, especially their environment. Research shows 50-75% of all environmental mastitis occurs during the dry period, most of which occurs in the calving pen.

SEASONAL FACTORS

USDA monitors BTSCC. The national average tends to rise in spring and tail off in fall. This is partly because of the seasonal

increase in the number of fresh cows entering milking herds. Increased bacterial growth in warm weather is another seasonal factor.

Bedding choice and maintenance affect cow comfort and SCC, in turn affecting production, mastitis treatment costs, and quality bonuses.

Sand is the gold standard for comfort and cleanliness.

If sand is not an option, large-particle pine shavings are the next best choice. Bedding made of plant material harbors bacteria. University of Minnesota scientists tested different materials and found they support bacterial growth differently.

Sand and large pine shavings supported the least amount of bacteria. Medium levels of bacteria were supported in paper dots, shredded paper, aspen, and a mixture of oak and pine shavings. The highest levels of bacteria were supported in fine particle sawdust, crushed or ground hulls, and straw.

STALL MANAGEMENT TIPS

Reduce SCC with good bedding selection and maintenance:

- ▶ Use enough bedding.
- ▶ Use inorganic material (sand) or large particle shavings, preferably pine.
- ▶ Change bedding daily to keep it clean and dry.
- ▶ Groom stalls 3 times a day to remove soiled bedding.
- ▶ Do not move bedding from front of stall to rear of stall, and keep feed out of the bedding.
- ▶ Always place fresh bedding at the rear one-third of the stall.
- ▶ Apply anti-bacterial bedding treatments to the rear one-third of the stall before placing fresh bedding.
- ▶ Focus on bedding hygiene for the dry cow environment, and especially the calving pens.

THE BOTTOM LINE

Researchers estimate the cost of one mastitis case is \$200. But the losses on most dairies do not stop there. For each clinical case in a herd, it is estimated that there are 15 to 40 subclinical cases contributing to elevated SCC and to 70% of the total milk loss associated with mastitis.

Clinical and subclinical mastitis affect profits in many ways:

1. less milk yield,
2. reduced quality premiums,
3. increased culling,
4. discarded milk,
5. treatment costs,
6. poor reproduction, and
7. increased risk of other diseases.

Subclinical mastitis affects the milk check in three ways.

According to Penn State University researchers: "Herds that have continuous mastitis and SCC problems take a double or triple hit on milk price. The component value is reduced, plus in some federal orders there is a deduction for SCC over 350,000. Quality premiums from the milk handler may be lost as well."

Benchmarks to shoot for include:

- ▶ 200,000 or less SCC (avg.)
- ▶ 2% or less clinical mastitis
- ▶ 10% or less of clinical cases developing as "hot" mastitis.

Dairies that do not achieve these benchmarks may be surprised to discover the extent of their financial losses. Researchers peg these losses at between \$100 and \$175 per cow per year. That's annual lost income of \$11,000 to \$17,500 for a 100-cow dairy.

Talk to your veterinarian about a plan to reclaim these profits and ask your AB nutritionist about bedding additives—like **Bac-Down** antibacterial bedding treatment—for cleaner, drier stalls and control of environmental mastitis pathogens.

Table I. SCC and Production Loss

SCC	% Loss
100,000	2.5
200,000	5.0
300,000	6.0
400,000	7.0
600,000	8.0
800,000	9.0
1,000,000	10.0