

Guide to Crisis Management of Somatic Cell Counts in Goats

Vermont Agency of Agriculture, Food and Markets

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Second Edition by

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Table of Contents

Introduction	2
Regulations	2
Steps to prevent.....	3
Milking Procedures	3
Housing	3
Milking System	4
Prudent Treatment Plan.....	5
Culling.....	5
Records	5
SCC Crisis Management.....	5
Steps to rapidly reduce your bulk tank somatic cell count:.....	5
Identify problem animals	5
Culture and treat or cull	6
Summary	7

Introduction

Somatic cell count (SCC) is commonly referred to as a Leucocyte count. The SCC is predominantly composed of white blood cells and is considered a good indicator of udder health in a herd or flock. A cow with an SCC over 300,000 cells per ml. will generally have a bacterial infection associated with the elevation. This is not always true with goats. Other factors may influence SCC in goats; (1) the shedding of epithelial cells and (2) a lactational response whereby a goat may have a count over 1,000,000 cells per ml. and not have a bacterial agent causing the count. The extraneous cell issue is addressed using a special stain for goats that is different from the stain used for cows. The second issue of a non-infection SCC is addressed with the higher legal limit used for goats. Sheep, while exhibiting a minor lactational affect similar to one in cows, do not have a problem remaining below the legal limit. This guideline attempts to point out the major areas of mastitis prevention.

Regulations

The legal limit for SCC in grade “A” milk is 750,000 cells per ml. for cows, water buffaloes and sheep, and 1,500,000 cells per ml. for goats. At least once per month the milk from each producer is sampled for quality evaluation. When producers are in violation 2 out of your last 4 tests they are sent a letter by the Dairy Section of the Vermont Department of Agriculture, Food and Markets. This letter is a warning that if the next count exceeds the limit the milk will be excluded from the market and the producer will not be allowed to ship milk again until the problem causing the high count has been solved, and the count is below the legal limit.

Steps to prevent

Prevention is the key to mastitis control. Treating your way out of a mastitis problem is a temporary solution and measures need to be taken to make sure new cases are minimized or you will be back in trouble soon. **You need to identify what is causing the mastitis problem.** If possible think back to when the high SCC or clinical mastitis started and identify changes that occurred at about that time. Below are the steps that need to be followed to minimize new cases of mastitis and develop a program to deal with the mastitis you have and prevent future problems.

Milking Procedures

Proper milking procedures are essential to minimizing the risk of a bacterial infection causing mastitis. Attached to this guideline is a two page sheet outlining a good milking procedure. It also explains why the procedures are done in that order. Feel free to copy these pages and post them in your milking area. The goal is to milk clean, dry, sanitized teats. Be sure that you examine the teat ends as well as the sides of the teats after they have been prepped to determine that the ends are clean. Make sure the teat dip you are using is effective as shown by protocols consistent with those recommended by the National Mastitis Council. Your route supplier should be able to show you the study where the dip was tested, usually performed by a University. Eliminating “unknowns” is important when you are having problems, dips that have not been tested against these protocols may be effective dips, but without the independent verification the protocols provide, they are an added risk. After an exclusion there is a temporary reinstatement followed by accelerated sampling period where 4 samples will be taken in a 21 day period with no more than one per day or two in any week. If any of these are high you are again going to be excluded until the count is consistently below the limit.

Housing

Clean, dry, well nourished, comfortable dairy animals are less likely to develop problems from mastitis and many other disease problems as well. Bacteria need moisture, warmth, and nutrients to multiply and, while all of these are present in a dairy barn measures, can be taken to minimize them. Some bacteria will double every 20 minutes under the right conditions. Have the nutritive value of your forages analyzed and get a nutritionist to review the nutritional adequacy of your doe's dry and lactating rations, including micronutrients such as vitamin E, selenium, zinc, and copper. Dry matter calculations should be done on feed at a variety of times through the season to make sure the proper amounts are being fed. Udders should be clipped to minimize hair that may interfere with the sanitizing and milking processes.

Goats do not typically use stall barns, but are housed on bedded packs. This is much more feasible for small ruminants as the manure is much dryer than cows, however regular cleaning and bedding of the barn is still needed and overcrowding can be a major problem. The principle of clean, dry, and comfortable still applies. Feeding areas, when practical, should be in a different area than the pack. It is best for the animals to walk some distance from the feeding area to the pack as most of the manure will be in the feeding area and can be scraped out daily. The pack needs regular attention with bedding added daily and grooming performed to minimize areas where animals may get dirty. Water fountains should also be off the pack. Free stalls are being investigated as a dryer and more comfortable alternative, but not enough data is available to make specific recommendations.

Milking System

Your milking system harvests the crop paying your livelihood two or more times every day. It is essential that it is in good working order. The system needs to provide stable vacuum, adequate pulsation, and gentle milking action. Have your milking machine dealer test your system every 1,200 hours of operation, or annually, whichever is shorter.

Claws should have adequate capacity for efficient throughput of the milk or designed to not need capacity (quarter milkers, etc.). If clawless milking is used, the milk hose from the inflation to the milk fork should be at least 3 feet long, or provide special pulsation, like a periodic air inlet.

Milking systems for goats should run at about 10 to 12 inches of claw (or milk tube) vacuum and may use considerably more units per slope. For more detailed information on small ruminant milking systems refer to the Dairy Practices Council Guideline 70 (www.dairypc.org).

Depending on design, slope and milk flow rates goats should use approximately:

1.5" line	3 - 5 units per slope.
2" line	6 - 12 per slope;
2.5" line	12 - 18 per slope

Pulsation is also different than on cows. Sheep and goats store milk in their gland cistern more than in the milk producing sacs in the udder. This along with the smaller teat size makes a faster pulsation an acceptable option. For goats typical pulsation would be from 60 to 90 pulsations per minute (PPM) **Caution: speeding a pulsator designed to run at 60 PPM to 120 PPM may not give adequate rest phases or adequate milk phases.** It is best to use a pulsator designed to run at those speeds or have a dealer graph the pulsator in question to make sure it is functionally adequate. Inflations need to be sized for the herd involved. Some goat herds are successfully using cow inflations, however as the herds improve genetics a larger percent of the animals will have a consistently sized teat and may need to use a liner designed for goats. Talk with your equipment supplier about the options available.

Prudent Treatment Plan

A Treatment plan for mastitis should be developed with your veterinarian before problems start. This treatment plan should include:

- What to do when specific problems occur?
- Who will do the treatment?
- What records and withholding procedures will be utilized?
- Dry animal therapy program.

Culling

Cull those animals that repeatedly have mastitis problems. At times high SCC problems are from a poor culling and treatment plan more than from new infections. If high SCC animals are not culled, as new infections occur the percentage of high SCC animals increases and so does bulk tank SCC. A rule of thumb to judge your mastitis program is that you should not be treating more than 1% of your animals for mastitis any one month and only half of those should be new cases. If you are treating more than that you should contact your veterinarian and investigate why there is such a high infection rate.

Records

Good records are important in the long term strategy to maintaining low SCCs. Maintain accurate records of all treatments, including what quarter or half, what medicines were used and the date. Production records and other animal health records are also important to any herd's breeding plans and culling decisions. These records can help identify trends that can be corrected through management.

SCC Crisis Management

Steps to rapidly reduce your bulk tank somatic cell count:

Identify problem animals

Identify the animals causing the high somatic cell count. This can be done a number of ways.

1. One way is to contact DHIA and go onto a testing program that will regularly determine the SCC and milk production information. They have a variety of programs available and if you are not currently receiving SCC information from them they will do one month free. The telephone number for the Vermont DHIA office is 1-800-639-8067.
2. Another alternative is to have your milk handler SCC your individual animals. This option will depend on the milk handler involved. Contact your Milk Handler Field Rep. to see if their lab can handle the number of samples involved.

3. An alternative that can be done right at the farm is the California Mastitis Test (CMT). CMT's have the advantage of giving results for individual quarters, however it is commonly misused and, if not properly done, high SCC animals may be missed. CMT kits are available from most dairy suppliers and come with a set of instructions. The most common mistake is the use of too much milk and/or reagent. A few streams of foremilk (sampled before milking the animal) is stripped out. Then, a small amount of milk is put into the paddle. The paddle is tilted almost vertically so that only ½ to 1 teaspoon of milk remains in each cup. An **equal amount of reagent** is added to the milk and swirled for about 15 seconds. The paddle is then tipped back and forth to see if any thickening of the milk occurs. The more thickness, the higher the SCC. Any trace amount of gelling on the paddle is around a 300,000 per ml SCC, a thickening of the milk, but not clumping together is around 500,000 to 1,000,000. If it thickens and clumps together it is over 1,000,000. If it thickens and sticks to the paddle the count is generally over 2,000,000. If you are unsure, your inspector, most field reps, and Veterinarians have done CMTs and can help. **NOTE: CMTs must be read under a good bright light and the reagent needs to be stored properly. Follow label directions for storage.**

Culture and treat or cull

With goats you will want to identify the high SCC animals, but it will depend on the stage of lactation whether treating to reduce the SCC is appropriate or not. Work with your veterinarian to develop a treatment plan for the high SCC animals. Your veterinarian may want to culture some or all of the high SCC animals. Work with them and make decisions on each animal as to the economics of treating or culling. **Uninfected, late lactation animals with high SCCs may need to be dried off if they are causing the tank to be over the 1,000,000 limit even if they are not infected with mastitis.** About three weeks after they have been treated, do an SCC and consult your Veterinarian to see if cultures or repeat treating is needed. **Remember do not treat just based on SCC results, work closely with your veterinarian to ensure you are properly handling the animal treatment decisions and keeps good records.**

Summary

In summary, the key to long term low Somatic Cell Counts is prevention and that can be summarized to Five Points:

1. Proper milking procedures
2. Clean, dry, well nourished, comfortable animals
3. Properly operating and maintained milking system
4. Work with your Veterinarian on a good treatment plan
5. Cull chronic offenders
6. Records - animal history and treatment

If you already have a problem, develop a team approach to solve the problem. Work with your veterinarian, milk handler field representative, Vermont state dairy inspector, UVM Extension, DHIA, Vermont Agency of Agriculture's Milk Quality Enhancement Program and others as needed to develop a cohesive strategy to resolve the short term problem and prevent it from re-occurring. For help with long term prevention you can contact Laurel Junkins, Dairy Systems Coordinator, at 802 793-3868 or email at "laurel.junkins@state.vt.us".

Milking Procedure

- A. Completely Dip each Teat
- B. Observe the Foremilk
- C. Wipe Dry with Individual Towel
- D. Attach Unit
- E. Keep Unit Adjusted
- F. Shut Off Vacuum then Remove Unit
- G. Dip Teats

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For more detail read reverse side

Below is a further explanation of the milking procedure on the front of this sheet. Please post this in the milkhouse or milking parlor for review by personnel as needed

Animals should be maintained in a clean dry environment 24 hours a day

When predipping, it is very important to cover the entire teat. It is difficult to consistently cover the entire teat when spraying. Spraying in a tie stall barn is not recommended.

If teats are heavily soiled, wash with an individual paper towel dipped in an udder wash solution compatible with your predip.

- A. **Completely Dip** each teat. Use a product that is labeled as a predip and has been shown to be effective at preventing mastitis*. **Be sure to cover the entire teat** and allow for at least 30 seconds of contact time.
- B. **Observe** the foremilk from each teat for abnormalities. This stimulates letdown, checks for mastitis and sanitizes your hands. **Do not strip milk into your hand.**
- C. **Dry** teats thoroughly with individual paper towels removing all the teat dip to prevent any residue, If predip has dried then redip and remove while wet. Do not touch teats after removing the dip.
- D. **Attach** the milker unit within one minute after the start of stimulation. **Do not attach to blind quarters as they may contaminate the milk and spread mastitis to other animals.**
- E. **Adjust** unit as necessary for proper alignment to prevent squawks', especially at the end of milking when the slightest 'squawk' may increase new cases of mastitis.
- F. **Shut off** vacuum before removing unit.
- C. **Dip** teats immediately after unit removal with a product that has been shown to be effective at preventing new cases of mastitis*.

Discard used dip and wash dip container after each milking.

Caution: In freezing weather dip should be removed or allowed to dry before animals are turned out.

*Efficacy, ability to prevent mastitis, can be shown through research protocols recommended by The National Mastitis Council. The dips are tested under either experimental challenge or natural conditions.

For further explanation or for assistance with your milk quality problems please contact Laurel Junkins at the Milk Quality Enhancement Program (802) 793-3868 or email to laurel.junkins@state.vt.us