

The Dairy Goat Digest

Issue #2

September, 2003

The Dairy Food Safety Unit at OMAF wants to keep you better informed of changes and updates to the Raw Goat Milk Quality Program and ongoing quality issues. This newsletter will hopefully provide you with the information you need.

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INVITE/ANNOUNCEMENT

Presentation of June 2003 Raw Goat Milk Survey Findings

When: September 25th, 2003
1:00 PM – 3:00 PM.

Where: 1 Stone Road West
Guelph, ON
Conference Centre

1. Opening remarks – Dr. Thomas Baker – Director
2. Survey overview/results – Brenda Norris/Bruce Keown
3. Next Steps for the Dairy Goat Industry

Please confirm attendance with Camille Steffler at 1-888-466-2372 ext. 64583

Replacing Rubber Ware

By Brenda Norris

Of all the rubber parts in a dairy production operation, milking inflations, or liners, receive the majority of wear and tear. The rhythmic flexing action during milking eventually causes miniscule fissures which, over time, develop into cracks and holes. Since these cracks can not be properly cleaned of milk residue, inflations must be inspected on a regular basis and replaced when such defects are found.

Typically rubber inflations may last from 1200 to 1500 milkings, while silicone inflations are designed for 6500 milkings each. However, to be sure, check the manufacturers' recommendations.

Here is a simple formula you can use to calculate how often your inflations should be replaced.

Example: 3 milking units used on 60 goats

$$\frac{60 \text{ goats}}{3 \text{ units}} \times 2 \text{ milkings per day} = \text{each unit performs 40 milkings per day}$$

$$\frac{\text{inflation designed for 1200 milkings}}{40 \text{ milkings per day}} = \text{inflation change required every 30 days}$$

As well, all other rubber parts including milk hoses, gaskets, and plugs should be inspected frequently. All rubber parts should be replaced at least annually. Excessive use of chlorine will cause premature failure of the rubber parts and causes the black rubber "inking-off" on your hand when parts are inspected or handled. Inspect your equipment for rubber wear on a regular basis. Replace worn parts when necessary in order to optimize milk quality.

Goat Milk Sample Collection – How It Works

By Brenda Norris

OMAF understands the importance of a reliable goat milk sampling and testing program. The following article spells out exactly how the entire process works and the controls that are in place to make sure results are accurate – from the bulk tank to the laboratory.

Goat milk sample collection, transport, storage and testing all have the potential to affect quality results. That's why various checks and balances have been set up throughout the milk sampling system to ensure samples arrive at the laboratory in perfect condition.

Bulk Tank Milk Graders (BTMGs), more commonly referred to as "drivers", have been trained to collect milk samples that accurately represent what's in individual bulk tanks.

- BTMGs have been trained and certified for their duties associated with collection of milk at the farm including proper collection and storage of milk samples.
- Bulk tanks must be agitated for a minimum of five minutes prior to the sample collection
- Sterile, sealed, tamper-proof sample vials supplied by the University of Guelph's Laboratory Services Division (LSD) are used
- Individually wrapped sterile straws are used to fill sample vials. The supply of straws is kept clean and dry by the BTMG in order to prevent contaminating the sample.

- It is the producer's responsibility to provide a clean, long handled dipper if it is needed to reach the milk for sampling. Stainless steel or smooth plastic construction are preferred. Rough welds, wood and tape are not acceptable as they may contribute contamination to the sample. The dipper should be placed in a freshly prepared sanitizer solution and available to the BTMG on pickup day.
- If there happens to be a problem at the farm on collection day that will affect the sample e.g. agitator not working, dipper not available), the BTMG is still required to collect a sample. However, the BTMG will tag the sample to alert the lab that it is not representative of the milk in the tank and therefore should not be tested for composition or quality. If necessary, the sample will still be available for inhibitor testing and further grading.
- To maintain sample temperature between 1°C and 4°C, BTMGs are required to transport samples in coolers fitted with plastic inserts that are filled with an ice water mixture.

A sample vial containing water is kept in the insert at all times so the BTMG can easily monitor the cooler temperature with a hand held thermometer.

At the Depot

Up until recently, BTMGs delivered bulk tank milk samples to one of more than 100 depot fridges located at various milk transporters and processing facilities across the province. These depot fridges are equipped with Time Temperature Recorders (TTRs) that provide a continuous recording of the internal temperature. From these depots, milk samples have been routinely collected and transported to Lab Services Division (LSD), University of Guelph by a refrigerated truck.

Alternatively, goat milk supplier groups have made arrangements to transport samples from depots to LSD via private courier services such that samples arrive more frequently for testing. To verify sample temperatures during their trip to the lab, BTMGs pack them in coolers equipped with "Red Flag" temperature recording devices which are activated by the BTMG to begin recording cooler temperatures once the samples leave the care of the BTMG. Sample coolers are stored in the depot until pick up by the courier. Once samples arrive at LSD temperature readings are downloaded and checked by lab technicians. Quality testing is not performed if the sample temperature was, at any time, over 4°C.

Time Temperature Recorders

Whether samples are transported from depots to LSD using the refrigerated truck, or by private courier service, sample storage temperatures are traceable and can be verified prior to testing. All depot fridges, sample transport trucks, and the refrigerators at LSD are equipped with temperature recording devices. The charts from these temperature recorders are reviewed. If temperature recording information is not available, or if there is any indication of temperature abuse, samples are not tested.

Testing by an accredited laboratory

LSD is an accredited lab, meaning that it must take extra steps to ensure the accuracy and repeatability of test results. Sample handling and test methods and procedures are documented and validated by trained and experienced technicians. If technicians have any reason to suspect that samples have not been stored at the proper temperature, they are not tested. Only goat milk samples that are one or two days old (from point of collection at the farm) can be tested at LSD. Samples older than two days are not tested.

The integrity of the goat milk sampling system rests in the hands of producers, BTMGs, temperature recording technology and qualified lab technicians. All are doing their part to ensure high-quality goat milk and fair compensation for producers.

Do I have a Biofilm?

By Brenda Norris

Clean milking equipment depends on the use of approved cleaners at the appropriate strength, proper water temperatures, slugging action, and circulation times. Each one of these factors is critical to the effectiveness of any cleaning program. If conditions are less than perfect, you run the risk of buildups forming in equipment eventually leading to a dramatically increased Standard Plate Count (SPC) results.

Biofilms are buildups of bacteria, which often go undiagnosed because they are not necessarily visible to the naked eye and may only appear as a dull film on stainless steel, if at all. Bacteria from biofilms can periodically shed into the milkline and elevate SPC results. Biofilms typically form a protective layer providing resistance to traditional chemical cleaners and therefore require specialized treatment. Peracid cleaners such as Vortexx have been very effective in removing biofilms (refer to “Getting caught in the Vortexx – using peracid sanitizers” in this issue).

If you’re experiencing high SPC results and think it may be a biofilm, here are some suggestions to help you make decisions on whether or not you need to use a peracid cleaner.

- First do a visual check of your equipment for cleanliness and evidence of buildups. This is best done using a flashlight when equipment is dry. Buildups of milk solids should be removed with manual cleaning or by checking and making adjustments to your wash procedures. Depending on the type of buildup, an Emergency Wash procedure may remove it. For more information on Emergency Washes refer to the fact sheet on “Troubleshooting Films & Deposits on Dairy Goat Milking Equipment”, or consult with your dealer or OMAF Raw Milk Specialist. If all your equipment and practices check out acceptable and you are still experiencing a high SPC, your next step may be to consider a peracid. Dealers should provide you with detailed written instructions for using their products. Make sure you follow them carefully to achieve the best results and prevent injury.
- Raw Milk Specialists, Mike Foran, and Phillip Wilman, have conducted additional sampling of bulk tank milk in cases where a biofilm has been suspected. Samples are delivered to the Animal Health Lab, University of Guelph for culturing which identifies specific organisms present. *Pseudomonas* and *Bacillus* are some of the more common indicators of a biofilm. Tests take approximately 5 days to complete.
- Worn or cracked rubber parts are notorious for harboring bacteria. Ensure rubberware is in good condition and replaced when necessary. Refer to the article “Replacing Rubberware” in this issue for more information.
- Check your milk cooling. Milk should cool to between 1 and 4°C within an hour of finishing milking, and remain in this range between milkings. Interval agitation on bulk tanks should be set to provide a minimum of 5 minutes of agitation each hour in between milkings. Such mixing of the milk prevents warm layers from forming, and therefore a more uniform temperature is achieved throughout the tank of milk. Remember to check the bulk tank for cleanliness after it has been emptied, washed, and allowed to dry.
- Good hygiene practices are critical especially during milking time. Proper udder preparation, clean hands, clean sanitized milking equipment, and a dust-free environment are all important in preventing contamination of the milk.

High SPCs can be caused by a variety of reasons, many of which can be easily detected by the main operator. Take some time to check your system for defects or malfunctions. If you are still having problems identifying the source of high SPCs you may have a biofilm in which case you should consider using a peracid. Contact your dealer or one of the Raw Milk Specialists for advice.

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Getting Caught in the Vortex – Using Peracid Sanitizers

Vanessa Taylor

Milk Quality Assurance Program Lead, OMAF, Fergus

There has been a lot of interest lately from the goat milk community in the Ecolab product Vortexx, a sanitizer that contains a chemical called a “peracid” (also called “peracetic acid” or “peroxyacetic acid”). This product is designed to combat biofilms, and has been very effective in reducing the fluctuating bacteria counts recently experienced by some producers. However, Vortexx is not the answer to all milk quality problems and therefore needs some careful consideration before use.

Peracid is a synthetic chemical that is widely used in the meat and poultry processing industry as a sanitizer for food contact surfaces. It is a very strong oxidizer, what that means is that it can strip bacteria of its basic components, thereby killing them. Therefore the stronger the oxidizer, the more effectively bacteria are killed. Below is a table illustrating the oxidizing power of some common chemicals.

Sanitizer	Oxidizing Power (measured in electron-Volts)
Ozone	2.07
Peracetic acid (Peracid)	1.81
Chlorine dioxide	1.57
Chlorine bleach	1.36

From NOSB TAP Review of Peracetic acid, compiled by OMRI, November 2000

Peracid can have a longer residual activity in the milkline than chlorine making it a more effective sanitizer. It eventually breaks down into water and oxygen so there is virtually no residue left in the line, little chance of contamination of product, or environmental impact. Peracids also work well at lower temperatures and pH (from acidic to neutral) and can also control minerals from depositing on the milkline.

Overall, peracids have shown to be extremely effective in situations where a biofilm may be present in the milkline. Manufacturers and distributors of Vortexx can supply you with detailed written instructions for its use. Follow them carefully to achieve best results.

So do you switch sanitizers and use peracid over chlorine? Peracid products should be used to replace the chlorine sanitizer only when a biofilm is suspected. It is recommended by Dr. Mansel Griffith at the University of Guelph that you “use peracid-based sanitizers for only two weeks to ensure biofilm removal.....then go back to your regular sanitizer routine” (Ontario Milk Producer, September 2002). If you suspect that a biofilm may be present in your milkline, which usually occurs when your bacteria counts fluctuate or “spike”, and doubling your detergent and chlorine concentration or using a hot acid wash has had little effect, you may want to use a peracid product to combat the biofilm until counts settle. Rotating sanitizers in your cleaning regime may also be an option to consider, using chlorine as the regular sanitizer and then “shocking” the milkline with peracid once a month to help keep bacteria levels at bay. Vortexx is also more expensive than most chlorinated products, so using it only in the event of a suspected biofilm will help keep your cleaning costs down.

Do not fall into a false sense of security after using a peracid and achieving a low bacteria count that the problem has been resolved. If your counts start to rise or you notice a dull sheen to the inside of your pipes and bulk tank, use a peracid sanitizer as a preventive step against a possible biofilm from forming. Also do not take for granted that the milkline cleaning step is the only measure against poor milk quality. There may be other areas that are contributing to the bacteria levels in the milk, such as animal health, poor milking procedures, excessive dust in the environment during milking, or worn rubber parts like inflations and hoses. As with any sanitizer, the less contamination in the milk, the more effective the sanitizer will be, so maintaining good hygiene practices and equipment maintenance routines (refer to “Do I have a Biofilm?” in this issue) will help your cleaning regime be more effective and prevent your bulk tank from being rejected.

A producer spends so much time looking after the welfare of the goats they may dismiss their own personal safety. Peracid is an irritant to the eyes, skin and respiratory tract, and care should be taken when using this chemical or products containing peracid. Always protect yourself when working with any type of chemical, wear eye protection and gloves, and when pouring chemicals make sure the room is well ventilated. Most importantly, read the label on the product for proper handling and storage instructions.

The Dairy Goat News was brought to you by the following OMAF staff:

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