The Dairy Goat Digest

Issue #4 January/February 2004

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.

In this month's issue:

Provincial Auditor's Report

The Provincial Auditor's annual report was released on December 2nd, 2003. The report Included follow-up comments to the 2001 Annual Report in which deficiencies were noted in OMAF's Raw Goat Milk Quality Program. Since the release of the 2001 report, the Food Inspection Branch has directed efforts towards improvements in the areas noted by the Provincial Auditor at that time. The 2003 report reflects the progress made in the Raw Goat Milk Quality Program, including:

- the Ministry now has a complete and up-to-date list of goat milk producers maintained on a computer data base;
- a new inspection checklist for dairy goat farms has been developed and is in use;
- two full time inspectors have been hired by the Ministry to enhance the inspection process;
- inspection report deficiencies are being monitored to ensure that producers correct these on a timely basis or face suspension of milk shipments;
- a baseline study of goats' milk quality in the province is being conducted;
- policy development, consultation, and drafting of new regulations under the *Food Safety and Quality Act, 2001* is in progress and is expected to be completed in 2004; and
- improvements have been made to the number of producers with goat milk samples tested monthly. Unacceptable bacterial levels in goats' milk triggers a visit from the Ministry to the farms to correct the deficiencies.

Goat Milk Producer Survey

The Ontario Ministry of Agriculture and Food (OMAF) is continually strengthening the province's food safety system by updating standards and inspection programs, and by using new scientific knowledge and technologies to protect public health.

As part of this process of continual improvement, the Food Inspection Branch of OMAF will be conducting a province-wide survey of all dairy goat production operations. With this project, OMAF will be able to verify its inventory of existing goat milk production operations in Ontario, and identify key areas to improve the quality and safety of the raw product.

A wide variety of information will be gathered via a questionnaire to provide a picture of the current dairy goat industry, including:

- milk operation and production practices;
- type and maintenance of milk production equipment;
- animal health; and
- general producer information (i.e size of herd).

The data collected will be summarized, with a report distributed to dairy goat producers as quickly as possible. Please note that any personal/identifying information will remain confidential. The final report will contain only summary information and general findings.

Data from the survey will be used to help guide decisions on where to focus efforts for improving raw goat milk safety and quality. It will also be used for the development of appropriate regulations to address food safety risks, while considering economic impact to the industry, under the *Food Safety and Quality Act, 2001*.

The survey will be mailed to individual producers in February, and Food Inspection Branch (FIB) requests and appreciates your cooperation in completing as much of the survey as possible. FIB Raw Milk Specialists will be making follow up appointments with producers to help complete the information, answer any questions or concerns and to collect the surveys. This information will provide an accurate, detailed picture of the industry and will be of great benefit as the industry expands and new regulations are developed.

If you have any questions in the meantime, contact Brenda Norris, Dairy Food Safety Program Coordinator, at (519) 826-4684, toll free at 1-888-466-2372, Ext. 64684, or by email at brenda.norris@omaf.gov.on.ca

Checking temperatures to stay out of hot water

By Mike Foran & Brenda Norris, OMAF Dairy Food Safety Program

The most common reason for producers running into quality problems can be related to milking equipment cleaning. In order to provide high quality milk to the marketplace a pipeline milking system must clean up perfectly after each milking. The four basics of cleaning are time, temperature, chemical concentration and physical action. Of these four important factors in each cycle of a clean-in-place (CIP) system, failure to maintain proper temperatures is probably the biggest culprit when it comes to cleaning problems.

Step 1- Pre-rinse cycle

The pre-rinse removes 90 to 95% of milk solids and warms up the milk lines, which will help maintain temperature in the wash cycle. Water temperature should start at 43°C to 60°C (110°F to 140°F). If water temperature drops below 38°C (100°F) milk fat will solidify back onto the milk line. Likewise, too high a pre-rinse temperature can bake on milk proteins making them much more difficult to remove in the subsequent wash cycle. Check temperatures at the beginning

and end of the cycle to be sure. A hand held thermometer, similar to that used by the Bulk Tank Milk Grader to measure milk temperature, can be a useful tool to confirm wash cycle temperatures.

Pre-rinse water should not be re-circulated. Re-circulating the pre-rinse water can reduce the cleaning effectiveness by extending the length of the cycle, consequently allowing the solution temperature to drop and lead to re-depositing of milk solids onto pipeline surfaces. Use of a pre-rinse divert valve will eliminate re-circulation of milk soil and reduce the load that must be removed during the wash cycle.

Step 2- Hot chlorinated alkaline wash cycle

Hot water is critical to softening fat and breaking up protein. The alkali in the cleaner breaks down milk fat into components that are suspended in the cleaning solution. The chlorine breaks up the proteins which are suspended in the wash solution.

Start temperature should be 71°C to 76°C (160°F to 170°F). Residential water heaters will not provide hot enough water, however they can be retrofitted to meet hot water requirements for CIP cleaning. Water temperature at the end of the wash cycle must be absolutely no less than 43°C (110°F), and ideally no less than 49°C (120°F) with a circulation time of 6 to 10 minutes. Note that maintaining adequate end wash temperature is more important than precise wash solution contact time given that low temperatures will allow milk solids to re-deposit on pipeline surfaces. Again, check temperatures at the beginning and end of the wash cycle to be sure.

A sufficient supply of hot water is one of the first items to investigate if encountering a bacterial problem. The water heater needs to be adequately sized for your requirements. The actual amount of hot water available from a tank is about 70% of its capacity. Using hot water for other uses, e.g. mixing milk replacer, can reduce the availability of hot water for pipeline washing. Recovery rates will vary depending on your specific heater. The time between a pipeline wash and a bulk tank wash needs to be sufficient to allow the water heater to recover.

Water heater problems can go undetected for a long time if wash temperatures are not monitored. Calcium and magnesium salts can accumulate in water heaters and reduce heating capacity. A burnt out bottom element is a frequent problem. Buildups in water pipes and screens can restrict flow of hot water to the wash sink, leading to long fill times and resultant heat losses.

Systems with air leakage can cool wash water very rapidly and may cause poor slugging. Maintain water level in CIP sink so that suction lines never draw air. The pipeline must be free of air leaks at joints and milk inlets. If your system has an air injector, proper adjustment is essential. The air injector open time determines slug travel distance. The open time should be just long enough to cause the slug to travel to the receiver jar before it breaks up. The air injector closed time determines the amount of water drawn in and initial slug length. Slug volume should be about one third the volume of the receiver.

Wash temperatures as well as chemical concentrations can be adversely affected by residual water from previous cycles. All secondary drains, especially from the receiver, must be large enough to drain completely before the next cycle. All milk lines and wash lines need adequate and continuous slope to allow for complete drainage between cycles. Wash sink drains not closing properly can result in hot water loss and detergent loss.

The amount of detergent used depends on volume of water and water hardness. Your chemical supplier should provide a wash procedure chart, detailing the types and amounts of cleaners required for each cycle of your equipment wash system.

Step 3 – Acid rinse cycle

Acid neutralizes alkaline residues and dissolves mineral deposits for easy removal. This final rinse cycle leaves the pipeline with an acid pH, which suppresses bacterial growth. Water temperature is not critical in this cycle but should comply with label recommendation as posted on the wash chart.

Step 4 Sanitize cycle

The sanitize cycle eliminates bacteria that may grow on equipment surfaces between milkings even when well cleaned and acid rinsed. A warm solution at 43°C (110°F) containing about 200 ppm chlorine should be used just prior to milking. Cycle time is usually 3 to 4 minutes. Ensure all sanitizer is sufficiently drained from the system prior to milking. Do not follow the sanitizing cycle with a clear water rinse since any bacteria present in the milk house water supply could contaminate the milking system.

Bulk Tank CIP Systems

Bulk tank CIP cleaning involves the same cycles and temperatures as pipeline cleaning. However, bulk tanks are often more difficult to clean than pipelines. Frequent bulk tank cleaning problem areas include:

- Outlet and valve
- Plug and plunger rod
- Under the bridge and lid
- Dipstick and dipstick socket
- The corners of a square tank
- Agitator paddles

A hand held thermometer and strong flashlight are valuable tools in trouble shooting bacterial problems. A little investment of your time to routinely observe your wash system in operation, and check equipment cleanliness afterwards, can go a long way towards ensuring high quality milk production.

Newsletters available on line!

Previous issues of the Dairy Goat Digest are now available at:
http://www.gov.on.ca/OMAFRA/english/livestock/goat/news.html
Upcoming Events:

National Goat Identification Program - Producer Discussions chaired by the Canadian National Goat Federation

February 13	1 – 3 PM	Ops Community Center, east of Lindsay, Hwy #7
February 14	1 – 3 PM	Milverton Mennonite Fellowship Church, north of Milverton, Hwy 131
February 15	1 – 3 PM	Caldwell Municpal Hall, 20 Hwy 64 S (corner of Principale St.), Verner

OMAF and University of Guelph present:

Small Ruminant Milk Quality Workshop

Module #1: **Troubleshooting Bacteria Problems in the Milk System**

This workshop will cover function, cleaning, and mechanics of the milk system for improving your milk quality and your bottom line. Biofilms, Water Quality, Cleaning Agents, Pulsation, Vacuum, Regulators, Pumps, and Udder Preparation will be discussed in the workshop.

♦Guest Speaker: Mark McDougall, DFO Udder Health Specialist♦
Also, presentations by OMAF Raw Milk Specialists and Milk Quality Assurance Lead

Space is limited to 25 participants at each location. If there is enough interest, additional locations will be offered throughout the province at a later date.

February 24, 2004	11:00 AM – 3:00 PM	Wingham Columbus Centre, corner of Hwy 86 and 4
March 2, 2004	11:00 AM – 3:00 PM	OMAF Office, Woodstock, Hwy 59 North

Registration fee for Module #1: $35.00 includes GST ($32.71 + $2.29 GST = $35.00)
Registration fee includes course material. Lunch is provided.
Payments accepted: Credit Card, Cash, or Cheque/Money Order payable to "University of Guelph". (University of Guelph GST registration number R 108161829)

⇒ To register, contact Marie Skerrit at 519-846-3387 before February 18, 2004.

Next Module offered as part of the Small Ruminant Milk Quality Workshop will be "Small Ruminant Health" with OMAF Small Ruminant Vet Scientist Dr. Jocelyn Jansen (registration in Spring 2004).

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