

THE DAIRY GOAT DIGEST

*Dairy Food Safety Program, Food Inspection Branch
Food Safety and Environment Division*

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BACTOSCAN TESTING OF BULK TANK SAMPLES

BY BRENDA NORRIS, DAIRY TECHNICAL REGULATORY ANALYST, DAIRY FOOD SAFETY PROGRAM

Bacteria numbers in goat milk are routinely determined using the Standard Plate Count (SPC) test on producer bulk tank samples each month. A study was undertaken to examine the feasibility of using the Bactoscan FC to conduct the routine testing instead of the SPC.

Between March 2009 and February 2010 a total of 1,380 samples from Ontario goat milk producers were tested using both the SPC and Bactoscan FC. In addition samples were also tested for psychrotrophic bacteria (bacteria that grow at cold temperatures), composition (butterfat, protein, lactose), and somatic cell counts.

The effect of season, age of milk in the bulk tank, and shipping volumes were also considered. Initial data analysis suggests the Bactoscan FC could provide a reasonable alternative to the routine SPC method for bacteria enumeration. The Bactoscan offers quicker results by reducing testing time from 2 days when using the SPC method to a matter of minutes when using the Bactoscan.

DO NOT FORGET: INTERNATIONAL GOAT SYMPOSIUM

Stratford, Ontario is the place to be from August 10 to 12, 2010 for the fifth International Goat Symposium. This three day event includes numerous activities, such as farm tours, speakers, a dairy goat show, and much, much more!

Check out the website: <http://www.goatsymposium.com/index.htm> to find out more about the Symposium including all the events, accommodations, registration and directions. Still have questions? Check out the contact IGS link off of the website main page.

TROUBLESHOOTING TIPS FOR BULK TANK WASHERS

BY MIKE FORAN, RAW MILK SPECIALIST, DAIRY FOOD SAFETY PROGRAM

Bulk Tank Washer Issues

A bulk tank is often a more difficult vessel to clean than a pipeline. Automatic bulk tank wash systems clean by covering the inner surfaces of the tank with a sprayed sheet of cleaning solution. The large surface area of a bulk tank and spray action of automatic tank washers can make it hard to maintain the required 120°F end temperature on the hot wash cycle. It is generally more difficult to maintain surface temperatures in spraying operations than in pipe flow conditions because of the greater surface to solution ratio. The scrubbing action in a milk pipeline is achieved by slugging and turbulence. Meanwhile only a small surface area of a bulk tank receives the force of the spray jet leaving much of the cleaning to the cascading action of the solution as it flows down the tank sides. Therefore the mechanical cleaning action is significantly reduced in a bulk tank compared to circulation cleaning of pipelines.

It is critical that all surfaces of the bulk tank receive adequate coverage with cleaning chemicals at proper temperatures and strength particularly since the hot wash circulated by some tank washers lasts only three and a half minutes.

There are a few different generations of tank washers, but the general operation is very similar. Here are a few items to be aware of that can have a significant impact on tank cleaning:

- The operator manual states the end of the jet tube should be three inches off the bottom of the bulk tank. The slots on the tip of the jet tube are designed to give the best coverage at this angle. Depending on the bulk tank size, adjustments to the washer legs may be needed to ensure the jet tube is three inches off the bottom of the tank.
- If the tip of the jet tube is dented or plugged the spray pattern can be altered and may result in a cleaning failure. The tip needs to be kept up off the floor and protected. Options are to hang the washer on the milk house wall or set the tip on a stainless bracket. (see figure 1)
- The slots on the jet tube are specific to tank size so check your manual to ensure you are using the right sized washer for your bulk tank.
- Tank washer impellers on these units can wear over time. Although the tank washer may appear to be functioning well, it may in fact not be delivering the required amount of water. This situation can be difficult to detect.
- The auto drain valve can malfunction and cause incomplete drainage between cycles. This will dilute and neutralize cleaning chemicals and affect temperatures of solutions. Cleaning chemicals can also be lost down the drain during tank filling.
- The agitator paddle needs to turn during cleaning cycles. This ensures all angles of the paddle and tank walls receive proper solution coverage.

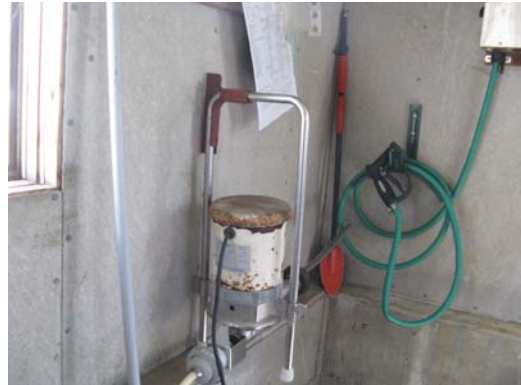


Figure 1. Shows improved storage of the jet tubes to prevent contamination

- Keep water supply strainers clean to maximize flow.
- Keep soap and acid containers clean.
- Repair any leaks promptly to prevent loss of cleaning chemicals and solutions.

Bulk Tanks with Spray Balls

Small orifices in a spray ball can clog easily from debris such as straw and bits of plastic. This will cause voids in the spray pattern and result in some surfaces not receiving adequate spray. Keeping a cap on the wash pump hose that connects to the bulk tank is one way of preventing debris and pests from entering the wash pump and bulk tank between washes. Don't let the spray ball act as a system strainer.

Cleaning validation

Observing one complete cleaning cycle, noting times and temperatures is often useful. The tank washer should be included in the dealer's preventative maintenance checks.

The easiest and most practical way to assess tank cleaning is to inspect the surfaces visually. Stainless surfaces must be dry to detect films of protein, fat or milkstone buildup. A strong flashlight is needed to conduct an effective examination. A blue / rainbow colour indicates a protein film and is difficult to remove. Water droplets clinging to the tank walls may indicate a fat film. Manually brush a small area of the tank with a strong chlorinated alkaline cleaner, then rinse and dry the surface. Critically examine the brushed area. If the brushed surface appears shinier than the adjacent non-brushed area, a film has been removed. Repeat this process with a strong acid and examine again.

Mineral films such as milkstone are removed by acid cleaners. Organic films of fat and/or protein are removed by hot chlorinated alkaline cleaners. If a tank cleaning issue is found, it is important to drill down to the root cause.

THE AGRICULTURAL MANAGEMENT INSTITUTE (AMI)

BY ARMAGHAN DAYYANI, PROGRAM COORDINATOR, DAIRY FOOD SAFETY PROGRAM

Ontario producers are encouraged to “take a new approach” to farm business management as a result of the governments’ investment in the Agricultural Management Institute (AMI).

AMI is being funded through the Growing Forward initiative to encourage the development and adoption of business management strategies for farm businesses. Their “Take A New Approach” campaign encourages producers to adopt new ways of thinking about farm business planning.

The mandate of AMI is to develop and promote initiatives that enhance farm business management practices and to provide funding for projects to develop business management and risk management tools, products, information, resources and training for farm families, farm managers and business advisors.

By stimulating ideas and funding projects, AMI increases the understanding and awareness of business management practices which enable Ontario farmers to meet their business goals.

Procedures and guidelines have been developed to assist the agricultural industry in accessing project funding available through AMI. Eligible applicants can submit completed project application forms to receive funding for activities that meet project objectives and criteria. Applications will be reviewed by the AMI Board of Directors.

Applicants that are unsure of their idea's fit with the AMI project criteria or would like to get general feedback from AMI staff regarding their idea are encouraged to contact AMI or submit a letter of intent prior to completing a full application. For more information on the Agricultural Management Institute's project funding procedures and guidelines and to access application forms visit: <http://www.takeanewapproach.ca/ami-funding.asp> or contact:

Agricultural Management Institute
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Source:

Ryan Koeslag's presentation for Ontario Ministry of Agriculture, Food and Rural Affairs on May 10, 2010
AMI website: <http://www.takeanewapproach.ca>

Links to more financial assistance information:

- Whether you currently own farm land or are looking to purchase, rent or lease acreage, starting a new farm business requires planning. The Ontario Ministry of Agriculture, Food and Rural Affairs has numerous resources gathered in this one location for your convenience. For more info visit: <http://www.omafr.gov.on.ca/english/busdev/newentrant/newent.htm>
- If you are looking for management information, Ontario Farm Management Analysis Project (OFMAP) is there to provide management information to farmers. With financial and production reports you are better able to identify profitability, strengths, weaknesses and efficiency of your farm business. For more information visit: <http://www.omafr.gov.on.ca/english/busdev/download/ofmap.htm>
- If you are looking for business risk management programs, Agricorp connects producers with those programs. For more information visit: <http://www.agricorp.com>

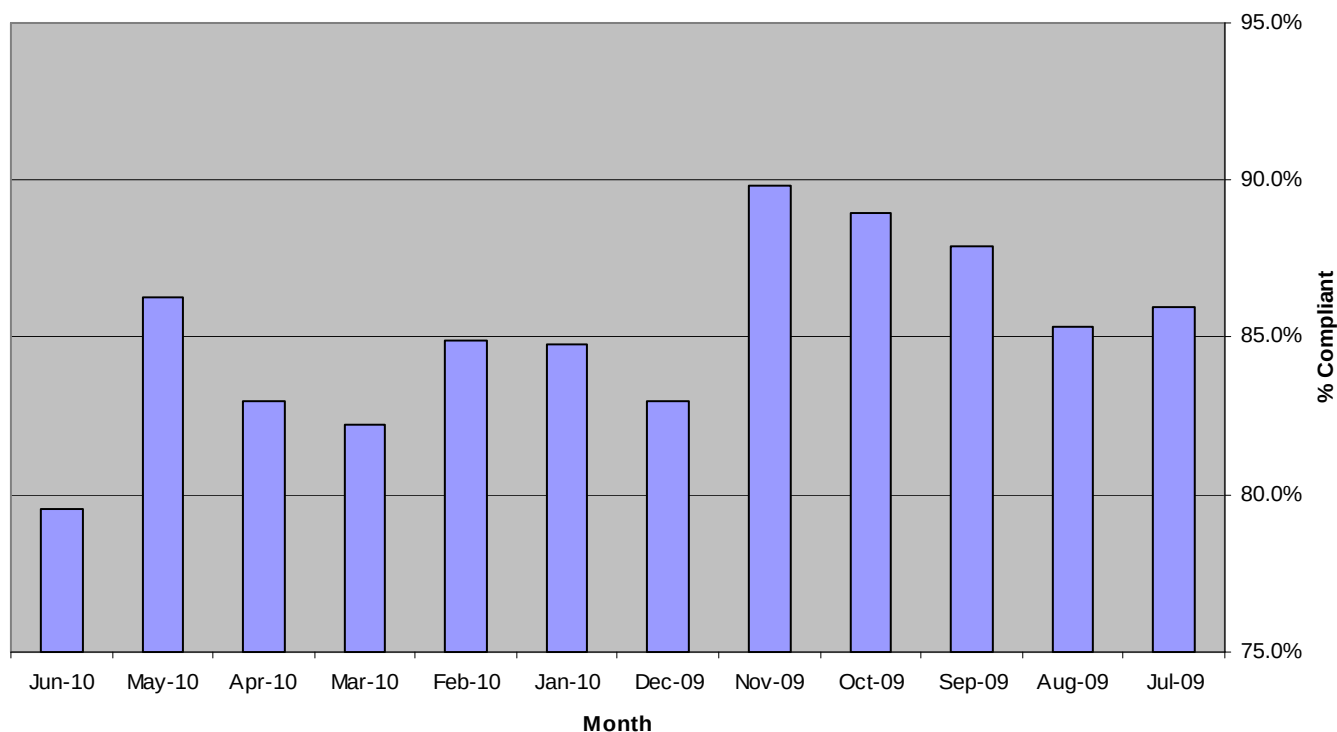
SUMMARY OF RAW GOAT MILK QUALITY

BY JEFF PERKINS, SCIENTIFIC SUPPORT ANALYST, INFORMATION MANAGEMENT UNIT

Goat Milk Standard Plate Counts for the Last Year Tests per Month and Distribution of Results

Year	Month	Samples Tested	<=10,000 cfu/mL	10,001-50,000 cfu/mL	>50,000 cfu/mL	% <10,000	% Compliant
2010	Jun-10	269	127	87	55	47.2%	79.6%
	May-10	270	145	88	37	53.7%	86.3%
	Apr-10	258	122	92	44	47.3%	82.9%
	Mar-10	259	126	87	46	48.6%	82.2%
	Feb-10	252	125	89	38	49.6%	84.9%
	Jan-10	250	127	85	38	50.8%	84.8%
2009	Dec-09	258	156	58	44	60.5%	82.9%
	Nov-09	266	180	59	27	67.7%	89.8%
	Oct-09	263	187	47	29	71.1%	89.0%
	Sep-09	264	161	71	32	61.0%	87.9%
	Aug-09	266	167	60	39	62.8%	85.3%
	Jul-09	257	168	53	36	65.4%	86.0%
Average	Previous 12 Months	261.0	149.3	73.0	38.8	57.2%	85.2%

Goat Milk Standard Plate Counts—Percentage of Producers Compliant (<=50,000 cfu/mL)



TIPS AND HELPFUL HINTS FOR PRODUCERS

BY MIKE FORAN AND PHIL WILMAN, RAW MILK SPECIALISTS, DAIRY FOOD SAFETY PROGRAM

Replacing Gaskets on Leaking Bulk Tank Outlet Valves

A leaking bulk tank outlet valve can contribute to a high bacteria count in milk. On warm days milk residue in the valve is a perfect environment for bacterial growth. In some cases producers with leaky valves may not have a bacteria issue. However on milk pick up day the milk passes through the contaminated outlet into the milk truck hose and into the tanker truck. The bacteria build-up in dirty outlet valves can have a negative impact on the entire truck load of milk. Replace leaking valve gaskets. Be sure to disassemble and clean the valve each time the bulk tank is emptied. Using the bulk tank milk outlet valve to obtain milk for on-farm use may also contribute to a bacteria build-up in the valve outlet area. Once the outlet valve is closed it should remain closed until milk collection day.

Milkhouse Reminders

There have been instances where the milk truck driver - BTMG (bulk tank milk grader) has been unable to locate labels for milk sample vials. This happens because the holder dispenser is not attached to the wall. If the label holder is left on a window sill or shelf, it somehow disappears from time to time. Please take a couple of minutes and secure the dispenser to a wall in a handy location.

A milk truck transfer hose takes a lot of day to day abuse and of course needs periodic replacement. However sharp edges on some older milk house hoseports can nick or cut the hose thus shortening its life. Making a small repair or upgrade to your hoseport and a periodic cleaning will keep your inspector and milk truck hauler happy!!

Goat Milk Summary for the Previous 12 Months

Year	Month	SPC Count	Fat Content	Freezing Point	Protein Content	Somatic Count
2010	Jun-10	47,594	3.487	-0.566	3.192	1,028,699
	May-10	44,477	3.690	-0.584	3.235	1,028,254
	Apr-10	40,034	3.802	-0.583	3.316	1,029,124
	Mar-10	43,785	4.054	-0.580	3.446	1,170,409
	Feb-10	36,422	4.171	-0.584	3.547	1,214,034
	Jan-10	43,033	4.190	-0.583	3.625	1,328,255
2009	Dec-09	28,944	4.189	-0.582	3.654	1,399,522
	Nov-09	23,807	4.063	-0.583	3.592	1,342,005
	Oct-09	21,391	3.953	-0.583	3.502	1,231,511
	Sep-09	30,966	3.561	-0.581	3.274	1,114,514
	Aug-09	34,249	3.334	-0.575	3.109	993,948
	Jul-09	36,815	3.391	-0.577	3.128	914,383
Average	Previous 12 Months	35,960	3.824	-0.580	3.385	1,149,555

CAN ONE GOAT IN A MILKING HERD OF 250 CAUSE A BULK TANK STANDARD PLATE COUNT TO SPIKE?

BY MIKE FORAN AND PHIL WILMAN, RAW MILK SPECIALISTS, DAIRY FOOD SAFETY PROGRAM

Experience tells us that an elevated Standard Plate Count (SPC) is usually caused by a cleaning or cooling issue. This is not always the case!! The following is an example of the steps that should be taken in investigating the source of a high SPC.

Background:

- A producer had a well managed dairy goat facility, milking about 250 goats.
- For the 4 months of April 17 to July 24th they had elevated and fluctuating SPC results. See Table 1.

Initial Findings:

- A bulk tank culture indicated low numbers of pseudomonas. This bug has been associated with bio-films which can grow (slowly) at refrigeration temperatures. The producer tried a peracetic acid / sanitizer for a week.
- A wash analysis of the tank was conducted. Temperatures and chemical strength were acceptable. Tank active alkalinity was at 600ppm. This is the lower end of the recommended strength. An active alkalinity of 800 – 900 ppm is recommended. The producer boosted detergent.
- The producer was not sanitizing the bulk tank prior to the first milking but resumed sanitizing the tank as suggested.
- The milk line was disassembled at almost every possible joint. All equipment appeared clean and shiny.
- We noticed that the drain valve and line by the receiver jar were possibly being contaminated by dirty water. The drain hose was very close to the sump hole and at times the hose was immersed in dirty water. The producer and dealer corrected this possible source of contamination.
- The equipment dealer conducted a preventative maintenance call and also a specific check of the washing systems for both the tank and line.
- Worn rubberware was replaced.
- The producer dried up 80 late lactation goats the first week of July.
- SPC problem continued but with higher counts this time – Too Numerous Too Count (TNTC). See Table 1.

Was it coming from the goats?

- A bulk tank culture indicated +3 Strep dysgalactiae. The literature on cows milk says this bug can be present in high numbers and cause high SPC. It is an environmental organism yet can be spread from one animal to another at milking. Udder preparation procedures were reviewed with the producer. He was using a 1% iodine product for post dip. There was no pre-milk preparation unless udders were visibly dirty. Bedding in housing areas had always been adequate during inspections.
- Hoard's Dairyman article indicated a cow quarter infected with Strep. dysgalactiae can shed 250 million bacteria per ml of milk, with no flakes, clots or udder swelling.
- The producer was advised to look to goats as the reservoir for bacteria problems.
- Even though the producer was reluctant to use the California Mastitis Test (CMT) due to time involved at milking, a CMT was completed on all goats.
- One half of the udder of one goat was identified as abnormal via the CMT. This goat had kidded in early April, right around the time the problems with SPC started.
- The entire suspect half udder was milked into a clean pail. After 10 minutes the milk was graded by sight and smell. There was a definite off odour and slight yellow colour. The milk was not bloody, flakey, chunky or stringy as you might see with clinical mastitis.
- Samples from each half of the udder of the suspect goat were collected and sent to the lab for testing. The suspect (left) half of the udder SPC was TNTC. The right side bacteria test was 250 cfu/ ml.
- A milk culture of the left udder half showed +4 Strep dysgalactiae (+4 indicates large numbers of organisms). It should be noted that no other organisms grew on the culture plate. When one organism takes over the culture plate this is strong evidence the goat may be the bacterial reservoir.
- A bulk tank culture from July 31st did not show any Strep dysgalactiae. The milk from the suspect goat was not in this tank.

...continued on page 7

CAN ONE GOAT IN A MILKING HERD OF 250... CONTINUED

- The Bulk Tank SPC from July 31st was 13, 850 cfu / ml. The SPC remained below 10,000 cfu/ml for the remainder of the year.
- Bulk tank Somatic Cell Count SCC did not increase and in this case did not point to udder health issue. This is not always the case.

Take Home Message:

The CMT is a very useful tool to quickly scan the herd for possible udder health issues. High SPC is most often the result of a cleaning or cooling issue, however, if these sources of poor milk quality are eliminated, looking at goats is the next logical step. Prevention of all udder infections may be impossible, but a clean dry environment and proper udder preparation and post milking dip will help. Review udder health management with your veterinarian.

Table 1. The SCC and SPC counts for the producer during the time when he noticed a spike and until the problem was resolved.

Date	SCC x1000 cells/ ml	SPC cfu/ml
Feb 7	947	3,100
Mar 6	891	3,000
April 10	880	6,900
Apr 17		43,500
Apr 24		72,000
May 1		8,150
May 8		50,000
May 15	1010	40,500
May 29		27,000
June 12		60,500
June 19	849	26,500
July 3		29,500
July 10		152,000
July 17		TNTC
July 24		TNTC
July 31		13,850
Aug 7	923	6,500
Aug - Dec	Average SCC Aug – Dec 937	Below 10,000 for remainder of year.

NEW RAW MILK SPECIALIST IN EASTERN ONTARIO

BY MONICA PLONA, SUMMER EXPERIENCE STUDENT, DAIRY FOOD SAFETY PROGRAM

Arnold Brittain has agreed to take on the additional role of Raw Milk Specialist in Eastern Ontario and will be helping out Mike Foran and Phil Wilman with dairy farm inspections in that area. Arnold began working for OMAFRA in 1987 as a Dairy Farm Inspector and in 1990 took on the position of Dairy Plant Specialist responsible for the inspection of dairy processing plants in Eastern Ontario. Arnold has many years of on-farm experience, including driving a milk truck. Arnold's assistance will allow quicker response to situations in the east and more efficient use of inspection staff resources.

NEW INTERIM SHEEP AND GOAT SPECIALIST

BY MONICA PLONA, SUMMER EXPERIENCE STUDENT, DAIRY FOOD SAFETY PROGRAM

Gerald Townsend has been appointed as the interim Sheep and Goat Specialist for OMAFRA replacing Anita O'Brien who has taken a year's sabbatical. Gerald has worked in various related positions over the years which have made him a great substitute for Anita including: 4-H and Junior Farmer Co-ordinator, Manager of Agriculture Employment Services in Waterloo, Wellington and Dufferin Counties, a verifier for the Canadian Agricultural Income Stabilization Program, an Extension Assistant in Wellington County and a Resource Information Agent for the Agriculture Information Contact Center. During the fall of 2007 Gerald also prepared a report for OMAFRA on resources needed in the goat industry.

BROUGHT TO YOU BY THE FOLLOWING OMAFRA STAFF:

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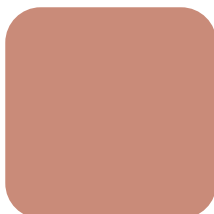
- Jeff Perkins, Scientific Support Analyst
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Extension is last 5 digits of telephone number

LEARN MORE!

Check out past issues of the Dairy Goat Digest at http://www.omafra.gov.on.ca/english/livestock/goat/news_dairygoat.html.



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