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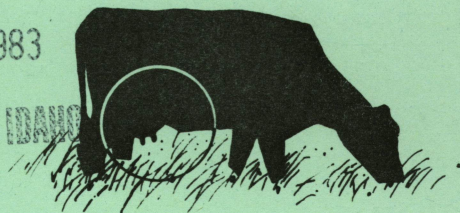
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Milk Quality Reports



*Edward A. Fiez, Extension Dairy Specialist
John Montoure, Extension Food Scientist and Research Food Scientist*

Milk quality is extremely important — both to you and your milk processor. Processors generally agree that the quality of milk products from their plants depends heavily on the quality of the raw product — the milk from your farm.

Processors routinely check the milk they receive and return this evaluation material to you as milk quality reports. These reports can help you:

- Evaluate or reward dairy help in and around the barn.
- Routinely monitor the subclinical mastitis in your herd.
- Isolate and identify weak management areas — equipment cleaning, sanitizing and housing.
- Routinely monitor the total quality level of the milk produced on your farm.

The reports and quality tests concentrate on three general areas: bacteria, contaminants and abnormal milk.

Bacteria

Milk is a perfect growth medium for bacteria. Bacteria can come from:

- The cow — from her udder or from her body.
- Milk from cows with mastitis.
- Dirty utensils, milking equipment and milking machines.
- The milker's hands.
- Poor priming procedures.
- Growth after production.

Milk directly from the cow is usually relatively low in bacteria (cows with mastitis are exceptions). However, teat and udder surfaces are good contamination sources. Milking wet or dirty teats is a prime contribution to bacteria contamination.

Milking equipment also can quickly contaminate milk with bacteria. Unclean, unsanitized equipment is a major cause of a high bacteria count. The milking unit itself can be a point of contamination. Old, worn inflations can harbor bacteria between milkings. Routine replacement of rubber parts will control this possible contamination source.

The milking machine operator and milking procedures can cause high bacterial counts. Careless machine handling can allow dirt, hair or manure to enter the teat cup during milking. Use of dirty wash buckets, sponges or rags for priming can contaminate your milk supply. More importantly, these practices can help to spread mastitis in your herd.

Rapid cooling of the milk once it reaches the bulk tank is important. This can prevent bacteria growth and reduce the chance of high counts.

Contaminants

The most critical contaminants are antibiotics and other inhibitors used to prevent bacteria growth. A negative test is the only satisfactory level for these substances.

Antibiotics usually enter the milk supply from cows treated for mastitis. In treating mastitis, keep accurate records on the cows treated, the types of drugs, the withdrawal times and the dosages. A good system of records will help prevent contamination with antibiotics.

Other inhibitor substances that can enter the milk include sanitizers, cleaners and feed additives. Milking units that are dipped in sanitizers between cows should be rinsed with clean water before reuse.

High levels of feed iodine can increase the iodine levels in your milk supply. Only recommended levels of iodine should be fed to lactating cows.

Be extremely careful of buying and feeding by-product feeds. Be sure the feeds are free of chemicals transferrable to your milk supply.

Water will also adulterate the milk. Milk processors routinely test for the contamination by water.

Careless washing of udders and inadequate housing can lead to high sediment scores. This problem can be prevented with sound management.

Insecticides and pesticides can also contaminate milk. Be especially cautious in using such chemicals in and around the dairy.

Abnormal Milk

The routine somatic cell test or mastitis test clearly benefits the dairyman. Subclinical mastitis is a major concern for you and your processor. Mastitis milk reduces the yield of key dairy products and can rob your herd of production on a continual basis. A long-range mastitis prevention program can eliminate the problem and threat of subclinical mastitis in your herd.

Quality Tests for Market Milk

Your processor may perform some of these tests and report back to you:

Bacteria Tests

Standard Plate Count (SPC) Quality Goal:

Grade A = less than 25,000

Grade B = less than 300,000

Measures the bacteria level in raw milk. The SPC is the accepted standard to judge raw milk quality.

Plate Loop Count (PLC) Quality Goal:

Grade A = less than 25,000

Grade B = less than 300,000

Measures the bacteria level in raw milk. Provides the same results as SPC and is easier to conduct.

Direct Microscopic Clump Count (DMCC) Quality Goal: less than 200,000

A direct method of determining the level of bacteria in raw milk. Counts are lower than those from SPC.

Preliminary Incubation Counts (PI) Quality Goal: negative test

A test using lower temperature that allows psychotropic bacteria to grow. Used to evaluate cleaning and sanitation.

Laboratory Pasteurized Count (LPC) Quality Goal: Grade A = less than 500

A laboratory test to determine the number of bacteria living after pasteurization. Also called the thermoduric count. Thermoduric bacteria are not destroyed by pasteurization and can accumulate in broken seams and joints in dairy equipment.

Coliform Test (Coli) Quality Goal: less than 100
A routine test to determine the number of coliform organisms in raw milk. The number of coliforms is directly related to farm sanitation.

Reduction Test for Bacteria Quality Goal: less than 300,000

Many tests are used to determine the level of bacteria using color indicators. Bacteria estimates are based on the time required to change indicator colors.

Abnormal Milk Tests

Wisconsin Mastitis Test (WMT) Quality Goal: less than 10mm or 500,000

Estimates the number of somatic cells in milk. The number of somatic cells or leukocytes is directly related to the herd level of subclinical mastitis. WMT results are reported as millimeters (mm). The WMT is a fast, simple test for somatic cells or subclinical mastitis.

California Mastitis Test (CMT) Quality Goal: negative or trace

Estimates the number of somatic cells. Results are reported as negative, trace, 1, 2 or 3. The CMT is an excellent cow side test for subclinical mastitis. The CMT is also used on bulk tank samples.

Direct Microscopic Somatic Cell Count (DMSCC) Quality Goal: 500,000 or less

A direct method of counting somatic cells in milk. The DMSCC is often used to verify high somatic cell counts detected with the WMT or CMT.

Electronic Somatic Cell Count (ESCC) Quality Goal: 500,000 or less

The somatic cell number is counted electronically. Gives a direct cell printout. Is used in DHI centers across the U.S. More processors will be using electronic cell counters in the future.

Other Quality Tests

Sediment Test Quality Goal: grade 1 or 2

Measures the amount of sediment in raw milk. The milk is drawn through a filter and graded against standards. The amount of sediment is a good indication of the conditions under which the milk was produced.

Acid Test or Acidity Quality Goal: less than .16 percent

Measures the amount of acid present in the milk. Acid level is a measure of freshness and general production conditions. The acidity is a value in checking milk quality for cheese production.

Antibiotics or Inhibitors Test Quality Goal: negative

Milk is routinely checked for residues like antibiotics. Any substance that inhibits bacteria growth will be detected. Recent changes have improved test accuracy.

Flavor Test Quality Goal: negative

Any one of a variety of abnormal or off-flavors are detected and noted on milk quality reports.

Adulterated Milk Test Quality Goal: negative

Milk is routinely checked for the addition of water. A cryoscope is used to determine the sample freezing point. This simple test will detect the addition of water.

Trouble Shooting for Milk Quality Problems

High bacteria counts

- Unclean equipment
- Worn rubber parts
- Inadequate cooling
- Improper sanitizing
- Dirty air hoses and air lines
- Inadequate hot water
- Mastitis cows
- Priming and washing procedures

High coliform counts

- Milking wet udders
- Poor bedding conditions
- Unclean alleys and lanes
- Dirty cows
- Unclipped udders
- Inadequate cooling
- Priming and washing procedures

High pasteurized counts

- Unsanitary production methods
- Improper cleaning and sterilizing of machinery
- Contaminated milking systems — loose joints and seams
- Large number of bacteria in raw sample

High abnormal milk test

- Improper priming procedures
- Faulty or inadequate milk equipment
- Clinical and subclinical mastitis
- A high percentage of old cows
- A high percentage of late lactation cows

Excessive sediment

- Inadequate washing and drying of udders

- Inadequate housing or inadequate bedding in rest areas
- Dirty corrals, lanes and alleyways
- Unclipped udders
- Improper cow preparation

Flavor problems

- Unclean production facilities
- Feeding methods
- Water supply
- Unclean milk equipment
- Diseased cows
- Unclean cows
- High number of bacteria

Positive test for antibiotics or inhibitors

- Milk from treated cows added into milk supply
- Feed additives (improper or unapproved)
- Failure to rinse equipment correctly after sanitizing
- Contaminated feeds

Adulterated milk (water)

- Milking wet udders
- Failure to drain milking system correctly before milking
- Rinsing line at the end of milking into milk supply
- Not draining milking units after rinsing between cows

High acidity

- Cows
- High bacteria count
- Air entry into system
- Inadequate cooling
- Unclean equipment

Glossary of Terms

WMT	Wisconsin Mastitis Test	Inhibitor	Substance that prevents the growth of selected bacteria
DMCC	Direct microscopic clump count	Off-flavor	Any flavor in milk that distracts from a sweet, fresh taste
Coli	Coliform test	ml	Milliliter — a unit of measure in the metric system. The usual volume of milk for reporting bacteria numbers.
LPC	Laboratory pasteurized count	mm	Millimeter — a unit of length in the metric system. The method of measurement for reporting the results of Wisconsin Mastitis Test results.
PI	Preliminary incubation count		
PLC	Plate loop count		
SPC	Standard Plate Count		
CMT	California Mastitis Test	Adulterated milk	Milk containing a measurable amount of water.
DMSCC	Direct microscopic somatic cell count		
ESCC	Electronic somatic cell count		

This College of Agriculture publication is one in a series on dairy herd management to reduce mastitis incidence and improve milk quality. Other titles you will want to get are:

CIS 621	Milking Equipment Design, Operation and Maintenance	10 cents
CIS 622	Milking Procedures to Maximize Production	10 cents
CIS 624	Mastitis and Somatic Cells in Milk	10 cents
CIS 625	Cleaning and Sanitizing Milking Equipment	5 cents
CIS 626	Preventing Milk Adulteration and Contamination	10 cents
CIS 627	Heritability, Mastitis Incidence and Milk Production	5 cents

You may secure copies of these publications from your University of Idaho Cooperative Extension county office. Or, you may order directly from:

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