

SAMPLE COLLECTION & HANDLING

SAMPLE PICK-UP

Milk Quality Testing (MQT) plays an important role in ensuring milk quality. MQT is a commercial laboratory subsidiary of Dairy Farmers of America that tests samples from the states of the Central Area. MQT also tests milk for outside accounts.

Samples are picked up by haulers every day or every other day, depending on the poundage of milk at the farm. Each 3 oz. vial has a label with a bar code that identifies the farm. Each time milk is picked up, the hauler must take a representative sample from the milk that has been agitated and cooled. The sample must be taken with a dipper that has been sanitized. The following information must accompany every sample, including those taken at regular milk pickups and those taken for special testing at the lab:

- DATE
- TIME
- MILK TEMPERATUR AT THE TIME THE SAMPLE WAS TAKEN

Official samples must be received at the lab within 60 hours of pickup to be used for quality or antibiotic testing. They must be received within 72 hours of pickup to be used for somatic cell testing.

Samples are picked up at each plant at a regular predetermined schedule each week. Contact Lab Manager for plant pick-up schedule. Field reps. can also ship samples via FedEx or UPS to MQT.

The temperature of each sample is checked when it arrives at the lab. Any sample with a temperature above 40°F will NOT be tested.

SAMPLE BOTTLE LABELS

Each producer should have a supply of barcode labels in the milk house. Each time milk is removed from the farm; a sample should be taken and labeled with a sample sticker. The date, time and milk temperatures should be recorded in the spaces provided on the label. Any markings on the sample bottle label should be done in red with a felt tip marker (i.e. a Sharpie) to avoid interfering with the bar code scanner.

The sticker sheet includes one round sample bottle label for the top of the sample bottles and one rectangular label to be placed on the milk ticket. Each barcode includes a sequential code. This means both stickers on each sheet have the same sequential code. If the stickers are used to identify extra samples (rather than a sample leaving with milk pick up), use only one sample bottle sticker from each sheet, discarding the other stickers.

Each time a sample is processed through MQT, the barcode on the top of the sample bottle is scanned. This records important information about the sample, including how many stickers should be left at the farm. When a producer has 40 or fewer labels left, we reprint the labels. DFA labels will be sent to the hauler. Labels are also printed upon request. Call 816-801-6300 to request more labels and confirm the address that the bar codes are to be mailed.

INTRODUCTION

Proper collection of milk samples is of paramount importance for identification of mastitis pathogens. Aseptic technique is an absolute necessity when collecting milk samples to prevent contamination by organisms found on the cows' skin, udder and teats; hands of the sampler; and in the barn environment. Contaminated samples result in misdiagnosis, increased work and expense, confusion and frustration. Contamination can be avoided by following the procedures described below.

MATERIALS FOR SAMPLING

- Sterile vials or tubes
- 70% alcohol (ethyl or isopropyl)
- Cotton balls or gauze pledgets soaked in 70% alcohol, or commercially prepared, individually packaged alcohol swabs
- Cooler with ice or freezer packs for storing samples
- Racks for holding sample tubes
- Cow Barcodes or Black permanent marker

MILK SAMPLE COLLECTION

Milk samples may be collected individually from affected quarters (quarter milk samples) or combined from multiple quarters of a cow into one sample tube (composite milk samples). Composite milk samples are not recommended however, as cultures usually reveal growth of numerous different bacterial species, making it difficult, if not impossible, to determine which are mastitis pathogens and which are environmental contaminants. Isolation of contagious organisms such as *Staphylococcus aureus*, *Streptococcus agalactiae*, or *Mycoplasma* sp. is indication of true infection of the udder; environmental organisms such as *Streptococcus* spp., coliforms, *Staphylococcus* spp., (coagulase negative Staph.), *Pseudomonas* sp., *Corynebacterium* sp., yeast, and fungi may be contaminants or true infections. Unless you are only screening for contagious pathogens, composite milk samples should be avoided.

Milk samples may become contaminated with bacteria from the hands of the sample collector, the environment, and the teat skin or teat canal. It is important that proper sample collection techniques are used in order to avoid contamination of the milk sample.

Here are steps to aseptically collecting milk samples:

1. Wash your hands and put on new disposable gloves.
2. Using a permanent marker, label a new sample tube with the date, cow ID, and the quarter that the milk will be collected from (RF for right front, LF for left front, RR for right rear, LR for left rear). Keep the sample tube closed until the sample will be collected.
3. Make sure that the udder and teats are clean and dry. Pre-dip the teats with an effective germicidal teat dip and leave the dip on for 30 seconds.
4. Wipe each teat dry with a single-use paper or cloth towel, making sure there is no teat dip left behind on the teat, as it will kill the bacteria in your milk sample.
5. Discard 3 to 4 streams of milk to minimize risk of contamination of the sample with bacteria in the teat canal.
6. Scrub teat ends with a cotton ball or gauze pad soaked in alcohol. Scrub until the cotton ball or gauze pad comes away clean. If sampling more than one quarter of the same cow, scrub far teats before scrubbing near teats. Use a new cotton ball or gauze pad for each teat. Teats should not be dripping with alcohol, as the alcohol will kill the bacteria in your milk sample.
7. Open the sample tube immediately before the sample is taken. Do not let your hands or the teat end come into contact with the inside of the tube, including the lid. Collect milk until the sample tube is approximately $\frac{1}{2}$ full, holding the tube at an angle to prevent loose dirt or hair from falling into it. Immediately close the tube once filled.
8. Immediately put the sample tube in the refrigerator or on ice. Samples that will not be plated within 24 hours should be frozen. It is best to freeze samples before shipping to the lab.



Additional Tips:

- Plastic tubes with snap-on lids work best for collecting milk samples.
- Get tubes from hauler or field staff
- Whirl pack and Ziplock bags should not be used as they are easily contaminated during sample collection and also often leak during transportation.
- To avoid contamination, handle sample tubes properly to ensure sterility at all times. Make sure nothing but the sample milk comes into contact with the inside of the tubes.
- Check that sample tubes are no more than ½ full and that lids are completely closed to avoid leakage or bursting upon freezing (milk expands when frozen).
- Collect samples directly from teats. Bucket or milk meter samples carry over bacteria from previous cows.
- The best time to sample is at milking time before the cow is milked. If the sample is not collected at milking time, it should be taken at least 4 hours after the last milking.
- Label the sample tube with a permanent marker before sample collection as milk fat will cause the ink to smear.
- For composite milk samples, try to collect the same volume of milk from each quarter.
- Minimize contamination by collecting samples in a clean area, such as the parlor. Avoid areas with massive air movement where bedding and dust can cause major contamination problems.
- Make sure samples are cold or frozen until they are delivered to the lab to avoid excessive growth of bacteria, which can lead to misleading results.

BULK TANK MILK SAMPLES

Bulk tank milk cultures are a great way to monitor milk quality. They can determine the presence or absence of a bacterial group and identify predominant bacterial groups in bulk tank milk.

Here are some guidelines to collecting good bulk tank milk samples:

- Agitate the milk in the bulk tank for 5 minutes before sampling.
- Always collect the sample from the top of the bulk tank and never from the outlet as milk collected from the outlet is often contaminated.
- Use a clean sanitized dipper or sterile syringe to collect the sample.
- Fill the sample tube ½ full, as milk expands when frozen.
- Immediately place samples on ice or in the refrigerator. Freeze samples that will not be plated within 24 hours.

Ruegg, P. L. On-Farm Culture and Treatment Decisions

<http://milkquality.wisc.edu/using-on-farm-culturing-to-improve-mastitis-treatment/>

University of Minnesota Veterinary Diagnostic Laboratory. 8/20/2014. Collecting Milk Samples

<http://www.vdl.umn.edu/services-and-fees/udder-health-mastitis/collecting-milk-samples/index.htm>

University of Minnesota Laboratory for Udder Health. Aseptic Milk Sample Collection

http://www.vdl.umn.edu/prod/groups/cvm/@pub/@cvm/@vdl/documents/content/cvm_content_483760.pdf

Using Bulk Tank Milk Cultures in a Dairy Practice

<http://www.nmconline.org/articles/bulktank.htm>

Procedures for Collecting Milk Samples

<http://www.nmconline.org/sampling.htm>



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