



Bovine Mastitis: Milk Sample Collection and Handling

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The quality of samples taken for any diagnostic procedure is extremely important; however, the quality of samples for mastitis diagnosis is in many respects more critical than that for many other diseases. Aseptic technique in sample collection for bacterial culturing is an absolute necessity. Not only are there organisms that are contaminants, but also these same organisms have the potential to cause the disease. Contaminated samples lead to misdiagnosis, increased work, confusion, and frustration. Below is a list of materials needed and a stepwise technique for properly taking milk samples for bacterial culture analysis.

Materials for Sampling

1. Sterile vials or tubes, 5 to 15 milliliter capacity. Note: 1 milliliter = 1 cc.
2. 70 percent alcohol (ethyl or isopropyl).
3. Cotton balls or gauze soaked in 70 percent alcohol or commercially prepared individually packaged swabs.
4. Cooler with ice or freezer packs for storing samples.
5. Racks for holding sample tubes or vials while sampling cows and for storage.
6. Disinfectant for cleaning teats. Germicidal products used for premilking teat dipping are recommended.
7. Paper or cloth towels
8. Permanent ink pen or labels for identifying sample vials or tubes.

Sampling Technique

1. Label tubes prior to sampling. Include: date, farm, cow, quarter.
2. Using a hand or dry paper towel, brush loose dirt, bedding, and hair from the underside of udder and teats. Grossly dirty teats and udders should be washed and dried thoroughly before proceeding with sample collection. Udders should be washed as a last resort.
3. Discard a few streams of milk from the quarter and observe milk and udder for signs of clinical mastitis. Record all observations of clinical signs.
4. Predip all quarters in an effective predip product and allow 30 seconds of contact time.
5. Dry teats thoroughly with a paper towel or individual cloth towel.
6. Beginning with teats on the far side of the udder, scrub teat ends vigorously (10 to 15 seconds) with cotton balls or gauze moist with 70 percent alcohol. Use as many swabs as needed until no more dirt appears on the swab or is visible on the teat end. Do not use a swab on more than

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one teat. Reclean teat ends that come in contact with any object. If a cow is not cooperative, it may be necessary to sample each quarter immediately after cleaning with a cotton swab before moving to the next quarter.

7. To collect individual quarter samples, begin sampling from the closest teat and move to the teats on the far side of the udder – the reverse order from cleaning. To collect the sample, remove the cap from the tube or vial but do not set the cap down or touch the inner surface of the cap. Always keep the open end of the cap facing downward. Maintain the tube or vial at approximately a 45-degree angle while taking the sample. Do not allow the lip of the sample tube to touch the teat end. Collect one to three streams of milk and immediately replace and secure the cap. Make sure milk entering the tube does not touch the fingers or hands. Two to three milliliters of milk is generally sufficient sample size, and there is seldom need to collect more than 5 milliliters. Sample vials should never be filled more than three-fourths full.

To collect a composite sample (milk from all four quarters in the same tube), begin sample collection with the nearest teats and progress to the teats on the far side of the udder. A representative sample (1 to 2 milliliters) should be collected from each quarter. There is greater risk of contamination of composite samples because sample tubes are open for a longer period of time.

8. When samples are taken at the end of milking or between milkings, teats should be dipped in an effective germicidal teat dip following sample collection.
9. Store samples immediately on ice or in a refrigerator. Samples that will be cultured at a later date (after 24 to 48 hours) should be immediately frozen.

Sample Storage and Shipping

Samples should be properly packaged and kept cold (less than 40°F) or remain frozen during shipping. Use only a next-day delivery service when shipping samples any significant distance. Do not use first class mail service. Avoid shipping samples that may arrive at the laboratory on weekends or holidays.

Milk samples for bacterial culture analysis may be sent to the Oklahoma Animal Disease Diagnostic Laboratory in Stillwater, OK. For sample submission instructions and fee schedule contact the OADDL at www.cvm.okstate.edu/Depts/ADL/oaddl/oaddl.htm or call (405) 744-6623.

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Adapted from: Laboratory Handbook on Bovine Mastitis. 1999. National Mastitis Council. Madison, WI.

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0904 JA