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The importance of milk culturing

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After working in this state for nearly 15 years, I've learned that I don't often get a phone call when everything is going well on a farm. The call typically comes when producers are having problems with milk quality, whether that be an elevated somatic cell count, standard plate count or preliminary incubation (PI) count. In order to gain direction in how to troubleshoot the problem, my first recommendation is always to start with milk sample collection and bacteriologic culture.

A great deal of information can be gained from milk culturing. Standard milk bacteriology can be run on aseptically collected quarter milk samples and in turn can reveal causes of both subclinical and clinical mastitis, as well as the reason for a high somatic cell count. Additionally, we can use this knowledge to assess dry cow management programs and determine whether a case of mastitis has cured. Each individual herd has its own bacterial profile which will be dependent on specific management practices on that herd, including milking procedures, bedding type, and the use of various products including bedding additives. By understanding the bacterial profile, we can construct and evaluate control programs with regards to milking procedures, as well as programs related to dry cows, lactating cows and also calf management.

Beyond samples collected from individual cow quarters, there is merit in collection of bulk tank samples. I like to think of bulk tank analysis as surveillance testing. Although the old adage of "dilution is the solution to pollution" may hold true in this scenario, bulk tank monitoring can give an indication to problems within a herd or even issues related to milking preparation procedures. Many milk buyers offer an incentive and—in some cases—assess a penalty associated with PI counts. These counts often bounce from low to high and back to low again in a short time and can drive dairy producers crazy trying to determine the cause. In some instances, an elevated PI count may be associated with actual udder infections, but that is a rare scenario. More often than not, we are looking for sources of dirty water into the milk line, improper equipment cleaning or poor milking procedures. Therefore, when an elevated PI count is the primary concern on an operation, I will recommend determining the predominant bacterial types found on the PI count and that information can help us better find the source of the problem.

My laboratory at Virginia Tech has always provided milk culturing services to Virginia dairy producers and continues to do so. We can analyze individual quarter samples, bulk tanks and PI counts, to mention a few. Following this article is a refresher on how to aseptically collect quarter milk samples. If you would like more information with regards to sample collection and submission, please contact me at milk@vt.edu or 540-231-4767. I would be happy to discuss how to get started and what to do with the information once you have received your results.

Aseptic technique for milk sampling

Excerpted from VCE Publication DASC-61P. Authored by Turner Swartz, Ph.D. student and Dr. Christina Petersson-Wolfe, Dairy Specialist, Virginia Cooperative Extension

Aseptic technique is critical for preventing contamination of milk samples and ensuring

accurate milk culture results. The following procedure was adapted from the Laboratory Handbook on Bovine Mastitis (Hogan et al.1999).

1. Record cow ID and quarter (RF, RR, LF, LR) onto each milk sample.
2. Wearing clean gloves, use a clean towel to remove gross filth off of teats.
3. Strip a few streams of milk from each quarter and record if there are clinical signs of mastitis. Clinical signs of mastitis can include but are not limited to a watery appearance, discoloration of the milk, flakes, or clots.
4. Dip all four teats with a germicidal teat dip. Allow teat dip to stay on teats for at least 30 seconds.
5. Dry teats thoroughly with a clean towel.
6. Using cotton balls soaked in 70 percent alcohol, squeeze out excess alcohol and vigorously scrub teat ends with cotton balls. Scrub teats until cotton balls remain clean. Each cotton ball should be used on only one teat.
7. Do not touch the teat end with your fingers, and do not allow the teat end to come into contact with the cow's legs, another teat, or tail.
8. Remove the cap from the sample tube, but **do not** set it down or touch the inside. Collect 3-5 mL of milk from each quarter, and recap the tube. Do not touch the tube lip with your fingers or with the cow's teat end.
9. Immediately place tubes on ice and transport them to the mastitis culture lab (2710 Litton-Reaves Hall, Virginia Tech) within six hours. If samples cannot be transported quickly, milk samples should be frozen and remain frozen until arrival at the laboratory.

Farm safety—everyone's responsibility, all of the time!

Authored by Jeremy Daubert, Extension Agent, Dairy--Rockingham County; jdaubert@vt.edu

As I write this, we are approaching national farm safety week. But, in reality safety on the farm is important every day. It is important not only to keep the cows and humans healthy, but also for the continuation of the family and farm business. There are inherent dangers on every farm, from animals to equipment to natural occurrences.

When we look at the number of deaths per 100,000 workers (20.4), the CDC places farming as one of the more dangerous occupations. Every year, there are thousands of injuries and hundreds of deaths from accidents on farms. It is sad and humbling to hear of these accidents and know of some of the victims. Many of these injuries are minor and only cause some time off of work, while other can be major or even deadly.

Continual education of all employees and family members who are on the farm is very important. Those who have done the same task over and over are just as likely to be injured. When I think back to any injury I have had over the years, nearly all of them can be attributed to complacency. I knew what to do, but was in a hurry and took some short cuts. In the end, it cost more time than it saved. Continually being reminded of the proper safety and the safe way to perform a job is crucial to farm safety. Training employees in equipment handling and working around animals should be done periodically on the farm. In addition, having dangers labeled on the farm is important. Don't assume that everyone knows the dangers present. Train employees, put up warning signs and make sure everyone knows of the farms standard operating procedures (SOPs). There should also be someone on the farm at all times that knows basic CPR.

Over 50% of the total injuries are strains and sprains. While these are minor in most cases, they do cause lost time from work. In a time when there are labor shortages, there may not be anyone to cover this lost work time. Some things to prevent strains and sprains are 1) Always know where you are placing your feet when stepping off a tractor, out of a truck or off a ladder. 2) Avoid twisting, bending, or repetitive movements 3) Use ergonomically designed equipment and rest when needed.

Five Key items every farm needs to implement for farm safety:

1. **Have Standard Operating Procedures that include continual training.** It is important that everyone on the farm including family members know what the risks are on the farm. Tasks that are asked of children should be age appropriate. Remember that every child develops and understands at a different rate. The SOPs should be written and available at all times. They should be evaluated and updated annually or more often.
2. **Have the proper safety equipment available.** Tractors should have a rollover protective structure and a working seatbelt. Every farm needs to have fire extinguishers available. Moving parts such as Power Take Off and motors should have the proper shields on them. Lights, flashers, and slow-moving vehicle emblems should be on equipment and properly maintained.
3. **Everyone on the farm should know who to call in case of an emergency.** Emergency contacts should be posted with the fire department, sheriff's office, doctors, and 911. The contacts should be posted and everyone needs to be aware of what they are and where to find them. Every farm needs an emergency action plan.
4. **Anyone entering an enclosed space, such as a silo or manure pit, needs proper equipment.** All who enter a confined space must be trained in the proper safety. Never enter an enclosed space alone, without someone nearby. Wear a safety harness and have an exit strategy. Make sure the air is safe to enter and the space is well ventilated. Test the air for toxic gasses and for oxygen levels. If someone passes out in an enclosed space, never follow them in, call 911 immediately.
5. **Use the proper equipment for the job.** Most equipment was designed for a specific job. Read the owner's manual, understand the equipment's limitations, and what safety precautions are needed. Don't use equipment for a job for which it was not intended.

Remember, safety on the farm is everyone's responsibility every day. Contact your local extension office for help developing SOPs for your farm. Resources are available to help you along the way. In addition to VCE, https://www.agrisafe.org/ and https://www.progressiveag.org/ can be of enormous value. Also, check with your local Fire Department as many can be of assistance with farm safety.

Upcoming Events

Regular Women in Agriculture Meetings
Every 1st Tuesday @ 7:30 pm

Virginia State Fair
September 23-October 3, 2021

World Dairy Expo
September 28- October 2, 2021

Table Talk Training Virginia
October 5-6, 2021

Hokie Cow Classic
October 18, 2021

Cattle WISE for Dairy & Beef
October 29, 2021

Annie's Project
Nov/Dec TBD

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.

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