
DAIRY NEWSLETTER

Interpreting milk culture results

Milk cultures are an important diagnostic tool for the modern dairy farm. To optimize their use, it is important to know when to take a sample, how to take a sample and how to interpret the results. This article will briefly discuss these points, and you can seek further information from your herd veterinarian. Milk cultures are plated at the Kirkton and St Mary's Veterinary Clinics, then interpreted at 24 and 48 hours by our registered veterinary technicians. Since the office is closed on Sundays, it is best to bring cultures in Monday-Thursday, however, samples will still be accepted on Fridays.

Which cows should be sampled?

Cows with high somatic cell count - Cows identified by milking equipment or DHI testing as having a high cell count are good candidates for milk culture. Somatic cell counts are most often related to mastitis but can also be related to any other types of inflammation, such as injuries. Cows with high somatic cell counts but normal looking milk are often infected with subclinical mastitis. Culturing the milk from high SCC cows can allow you to see what steps can be taken to reduce somatic cell counts on an individual cow basis. A composite sample of the udder can be taken, 4 individual quarter samples can be taken, or a CMT test can be used to identify which quarter(s) are infected and should be sampled. As a rule, individual quarter samples are superior as there is less chance of having dilution of the milk lead to issues detecting bacteria.

Cows that did not respond to therapy – Samples from cows that are being treated for clinical mastitis can be taken prior to the first treatment. The sample can then be stored in the freezer for up to 4 weeks. If the affected quarter(s) do not respond to treatment, frozen samples can be cultured to identify the pathogen causing mastitis. If necessary, a sample can also be sent away to be tested for antibiotic susceptibility.

Cows that are a part of an outbreak – If there is an increase in the number of clinical cases on farm, samples from the affected cows can be used to help with the outbreak investigation. The type of bacteria cultured can be used to identify risk factors for infection, as well as critical control points to reduce the incidence of new cases.

How to take a sample

1. Label the sterile milk vials with the cow number and sample origin (composite, RF, LF, RH, LH).
2. Wear gloves and prep the teats according to your usual milking routine.
3. Using an alcohol wipe, thoroughly clean the teat end for a minimum of ten seconds. When sampling multiple quarters, always clean the quarters that are farthest away first to avoid contaminating clean quarters with your wrist.
4. Remove the cap of the sterile sample container and set it somewhere clean, or keep it open on an angle.
5. Strip out the teat a few times to remove any remaining contaminants on the tip of the canal
6. Fill the sample container by holding it at an angle 3-4 cm away from the teat end. Only 2-4ml of milk is required. If sampling multiple quarters, sample the quarters closest to you first, collecting an equal volume of milk from each teat.

How to interpret culture results

Environmental Bacteria – Examples of environmental bacteria are *Strep species* and gram negative bacteria (*E.coli*, *Klebsiella etc.*). Identifying a pathogen of this class indicates that the cow got the infection from their teat(s) coming into contact with dirt, manure, bedding or milking machines that have been contaminated with these pathogens. A high rate of environmental mastitis warrants looking into cow cleanliness and milking prep routines.

Contagious Bacteria- Examples of contagious bacteria are *Staph aureus* and *strep ag*. These pathogens are spread when the milk of infected cows comes into contact with the teats of susceptible cows, usually through milking and prep equipment. Cows identified with contagious mastitis should be milked last if possible to reduce the risk of spread. A high rate of contagious mastitis warrants looking into milking prep routines and milking order. The type of bacteria can also influence the likelihood of a cure and influence culling decisions.

Contaminated Sample – If a milk sample cultures 3 or more bacteria types, the sample is likely contaminated. Ensure that proper sample collection and handling techniques are being followed. Ensure that the sample is immediately refrigerated after collection or brought directly to the clinic for culture. Samples are only viable in the fridge for 24 hours.

No growth – If no bacterial growth is seen at 48 hours, the sample is classified as having no growth. This result can indicate that the infection has already been cleared by the cow's immune system, that antibiotic therapy was already given, the number of bacteria was too low to be detected, the cow is not currently shedding bacteria, or the cow is not infected. Due to the intermittent shedding pattern of *Staph aureus*, a cow is not considered to be negative until 3 consecutive cultures within a 3-week period come back with no growth.