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Bulk Tank Milk Microorganisms Diagnostic Aid

Microorganisms are ubiquitous in the environment. Microorganism can be found in soil, water, plants, decaying organic matter, exudates of animals or within contaminated treatment preparations on any dairy farm. These microorganisms can be isolated from an infected udder, respiratory, reproductive, and digestive tracts. The potential always exists for these microorganisms to gain access to the mammary gland during favorable conditions. When these isolates are present, it is possible that the samples were not collected in an aseptic technique. Care should be taken when deciding if these isolates were the true cause of an infection or if they are indicative of contamination. Therefore, it is important to evaluate the bulk tank milk (BTM) culture results using all available information.

- **Yeast** – If causing intramammary infection, they are often self-limiting and eliminated spontaneously within 2 months. Avoid antibiotic treatment as this can exacerbate clinical signs of mastitis.
- ***Nocardia* species** – These organisms cause hard nodules or extensive fibrosis and may be found upon palpation. Udder secretions may be purulent. Affected quarters may develop draining sinus tracts. Mild or high fever may be observed. Infections are refractory to antibiotic treatment.
- ***Corynebacterium bovis*** – This organism is spread from cow-to-cow at milking and primarily colonizes the teat canal. It is generally considered mildly pathogenic causing mild infections with a slight increase in the somatic cell count (SCC) and reduction in milk production. Pure culture from a milk sample of *C. bovis* may indicate the cause of subclinical or chronic mastitis events.
- ***Trueperella (Arcanobacterium) pyogenes*** – This microorganism can cause acute, purulent mastitis. Infections caused by this microorganism are most often seen during humid weather. Infections occur most frequently in dry cows or heifers before calving. This organism can be seen with chronic mastitis cases with history of poor response to treatment. Typically these types of infections carry a poor prognosis often times leading to loss of mammary function.
- ***Mycobacterium* species** – This microorganism causes intramammary infections that are non-responsive to medical therapy, and if the infection is confirmed via diagnostic testing, affected cows should be removed/culled from the herd to prevent further infection to other herd mates and/or offspring.

- ***Bacillus* species and other Gram-positive bacilli** – *Bacillus cereus* and *B. subtilis* rarely cause intramammary infections. *B. cereus* infections may cause an acute and sometimes fatal gangrenous mastitis. Other gram-positive bacilli may be isolated from BTM and can reflect poor aseptic technique upon sampling for culture.

Many bacterial species may be isolated from BTM. It is important to utilize all information along with the culture report in order to identify problems of contamination or true mastitic infections.

References

J Hogan, R Gonzalez, R Harmon, S Nickerson, S Oliver, J Pankey, and K Smith. Laboratory Field Handbook of Bovine Mastitis. National Mastitis Council, Inc. Revised 1999.

Using Bulk tank Milk Cultures in a Dairy Practice. National Mastitis Council, Inc.