



SCC DIAGNOSTICS TOOL BOX



R-MR-8: Pre-milking Teat Prep is About More Than Just Mastitis

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For many years, I have been preaching that cow hygiene and effective pre-milking teat cleaning is critically important to preventing mastitis and reducing SCC. While this is true, achieving consistently clean teat surfaces before each milking is also important for milk microbiological quality.

Dirty teats may be contaminated with numerous different bacteria many of which will not produce mastitis or human health problems but can affect cheese yields, reduce fluid milk shelf life and increase cheese storage losses. Recent studies indicate this is a significant concern for milk processors and retailers. The sources of post-pasteurization milk spoilage bacteria are well documented. These bacteria thrive in the cow's environment: bedding, manure, fermented feed, soil and water are good examples. Contaminated bedding is the most likely source of teat contamination. As bacteria counts in bedding increase, so do bacteria on teat surfaces increase, and then so do the bacteria in raw milk increase. The last opportunity to remove these bacteria from teat surfaces is during pre-milking teat sanitation before milking machine attachment. When this important milking routine step is not consistently accomplished prior to each milking, contamination of milk is certain. If milk going into the bulk tank is cooled properly and maintained at low temperatures of 34 to 40° F these bacteria do not necessarily grow to high numbers during storage but they do tolerate the cool conditions well. Most are killed during pasteurization; however, some are heat-resistant forming spores to protect themselves from elimination only to re-emerge in the pasteurized and packaged product reducing shelf life and causing premature food spoilage losses.

Cornell researchers tried to reduce this problem using a high temperature short timed (HTST) pasteurization method. The hypothesis was that higher pasteurization temperatures would kill these bacteria. Ironically, the higher pasteurization temperatures backfired, actually stimulating more spore formation in these highly heat-resistant strains of milk spoilage bacteria. Therefore, it appears the best solution continues to be improving pre-milking teat sanitation. Fortunately, this does not mean extra work for the milkers since both mastitis and milk spoilage bacteria are removed by excellent pre-milking teat sanitation. This is an effort where you can literally "kill two birds with one stone".

Recently in the upper Midwest, there has been more interest in using manure solids for bedding. With the increased cost and lack of availability of traditional bedding materials, we expect the trend to continue. Studies of manure solids use in deeply bedded freestalls indicate some improvement in cow comfort. However, our studies indicate that this bedding material can have very high levels of these highly heat-resistant spore forming milk spoilage bacteria present. There were 44 manure solids samples cultured from 38 farms across Iowa, Minnesota, South Dakota and Wisconsin. Of the 44 samples, 33 had significant amounts of these highly heat-resistant bacteria. This suggests that particular attention needs to be given to providing excellent and consistent pre-milking teat sanitation in herds using manure solids for bedding material. This recommendation is neither surprising nor new as we have previously been encouraging dairies using manure solids for bedding to emphasize excellent pre-milking cow prep to maintain low SCC and mastitis. These results do give us another important reason to highlight this recommendation.

Without a doubt, improved pre-milking teat sanitation needs to be on the top of the milking management priority list!

What is EXCELLENT pre-milking teat sanitation?

Excellent pre-milking teat sanitation occurs when:

- Pre-dip is applied to cover the entire teat and allowed sufficient contact time (30 seconds) to kill bacteria on teat surfaces.
- Adequate time is taken to physically clean the teat surfaces of dirt and manure.
- Each teat, including the teat end, is completely dried with a single service towel to finish removing dirt, manure and pre-dip prior to milking machine attachment.
- Optimum milk letdown stimulation (tactile stimulation of the teat skin surfaces) of 10 to 20 seconds occurs. In most cases, this is adequate time to achieve excellent teat cleaning while at the same time creating a consistent milk letdown response.

What are the benefits of EXCELLENT pre-milking teat sanitation?

- Assures optimum milk letdown response.
- Increases milk flow rates and reduces milking time.
- Improves teat condition.
- Assures clean teat surfaces, which will minimize contamination of raw milk from milk spoilage bacteria.
- Reduces SCC and the number of mastitis infections.

By using the EXCELLENT pre-milking teat sanitation procedures and sticking to a 60 to 120 second pre-lag time (time between start of stimulation and attachment of milking unit) that complements those procedures, you will have an ideal milking routine designed to reduce SCC as well as assure that these milk spoilage bacteria are reduced, if not eliminated, from your bulk tank milk.

