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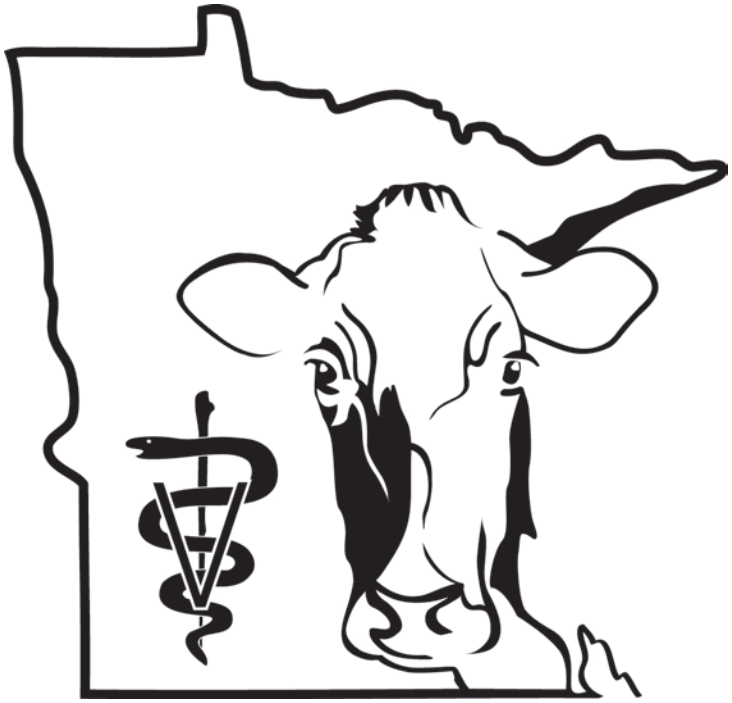

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Bulk Tank Monitoring for Environmental Mastitis Control

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Historically, when veterinarians have been confronted with a high somatic cell count herd, the major emphasis was placed on control of contagious mastitis pathogens. With the adoption of control procedures such as teat dipping, dry cow therapy, and the tendency to cull chronically infected cows, the infection rates associated with contagious organisms had decreased. However, in recent years this strategy has frequently been unsuccessful in controlling a SCC problem on most dairies.

Environmental mastitis pathogens have traditionally been considered less important because of the tendency to "self cure" and impression they frequently have a shorter duration of infection. It appears however, that recent developments in the dairy industry (confinement housing, high parlor through-put, increased emphasis on milking as many cows as possible, etc.) may have caused a change in this situation.

Culture results from the Laboratory for Udder Health at the University of Minnesota have shown some interesting trends over the last several years. When the results of more than 104,000 samples cultured (both clinical and survey) are examined the following picture is shown

Organism	% of total
Staph aureus	8
Strep ag	1
Coag. neg. staph	21
Non ag strep	18
Coliforms	15
Misc.	2
No Growth	35

The organisms usually considered contagious pathogens were isolated from 9% of the submitted samples. When evaluating only those samples in which bacteria were isolated, contagious agents were isolated from14% of those. These results indicate that the majority of mastitis infections are due to environmental bacteria.

Evaluating several years of somatic cell count data obtained from Minnesota DHIA as well as from a Minnesota Dairy coop reveals a pattern of significantly higher SCC levels during the months of June, July and August. This further suggests that environmental organisms are primary agents involved in mastitis infections.
Controlling environmental mastitis is somewhat difficult because it depends on sanitation and human factors as well as consistency in milking practices. All of which are intended to reduce the numbers of bacteria on the teat ends at the time the milking unit is attached. How do we

measure milker consistency when there many milkers essentially operating around the clock? How do we know the cows are clean and dry at the time of milking?

Various systems of monitoring milker consistency such as looking at filter socks, video cameras, and wiping teat ends with alcohol swabs and looking for dirt are employed. However, these methods all have limitations in either accuracy or the ability to monitor without an observer being present. Looking at cultures from bulk tanks or in line samplers can provide more specific information over longer periods of time because the environmental organisms in these samples come primarily from the teat skin and give an indication of the degree of teat contamination at the time of machine attachment.

The major problem with using bulk tank type samples for monitoring is the logistics of collecting, shipping and cost make it difficult to provide as much routine monitoring as is needed to give adequate feedback to the managers and milkers at the dairy.

A program was evaluated with a dairy cooperative in an attempt to solve some of the collection and shipping issues which could make more frequent monitoring possible. The route drivers routinely take samples from bulk tanks at pickup. These samples are taken aseptically from a well agitated tank and kept on ice for the coops own testing needs. Such samples are usable for the type bulk tank monitoring needed. We simply had the driver collect a second sample which was kept on ice until arrival at the dairy coop. This sample was then placed in a freezer and held there until it was shipped frozen to a central laboratory for evaluation.

This system solves many of the logistical problems but does not provide as rapid availability of results to the producer as would be desirable. Preliminary results form 30 herds suggests that simply monitoring non ag. strep and possibly coliforms can give a good indication of the level of teat contamination. If this information could be relayed to the producer in a timely manner adjustment in housing and milking practices could be made prior to the SCC rising. In addition, it could be used to determine the level of milker consistency. Implementing this system at the dairy milk plant would enable the dairy to obtain this information economically and timely.