

## **“The Value of Fresh Cow Surveillance in Creating Quality Milk”**

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The main goal of a dairy farm is to maximize income by optimizing milk production and minimizing expenses. Both clinical and subclinical mastitis reduce milk production and increase costs ... and mastitis remains the costliest disease in U.S. dairy cattle. One recent study estimated that the cost of just subclinical mastitis in the US dairy industry exceeds \$1 billion annually<sup>i</sup>. In 1999, the overall production loss for the average US dairy farm was estimated at \$110/cow annually, about \$185 in today's dollars.

Mastitis is caused by pathogens getting through the teat canal and entering the udder tissue. Many new infections occur during the late dry period or shortly after calving. Intramammary infection (IMI) during this period around calving increases the risk of clinical mastitis (CM) in the early subsequent lactation. Even in the best managed herds, 4 to 6% of quarters show inflammation at calving<sup>ii</sup>. Treatment of IMI right after calving can lead to reduced Bulk Tank SCC<sup>iii</sup> which, in turn, can provide the dairy with additional quality milk premiums. Eliminating intramammary infections (IMI) in early lactation may also provide significant economic benefits by decreasing the impact on the animal's peak milk production potential, may decrease the amount of discarded milk associated with treatment, and improve reproduction<sup>iv</sup>.

On-farm or in-clinic PCR testing is now available to detect the presence of specific DNA markers for mastitis pathogens like *Prototheca*, *Mycoplasma*, *Strep* and *Staph*. These tests provide same day (about 3 hrs.) results and offer cost savings since samples can be pooled from up to 5 cows. A typical Fresh Cow Mastitis Surveillance Program using this technology would be as follows:

- 1) Once a week on a given day, all animals fresh 4 to 10 days (inclusive) will have a composite sample taken of milk from all 4 quarters (using a Teat End Prep and Milk Sampling Protocol developed by the herd's veterinarian or the NMC). A “pooled sample” for PCR testing is then created by taking equal amounts of the individual cows' composite samples. The original composite cow samples will be immediately refrigerated in case they need to be tested later.
- 2) The 5-cow “pooled samples” are tested for the presence of genetic material from *Mycoplasma* species and *Prototheca* species using the Acumen Detection MYPRO™ reagent. Additionally, these samples may be tested for the presence of genetic material from *Staph aureus* and *Strep uberis* using the Acumen Detection SASUB™ reagent.
- 3) If a 5-cow pooled sample tests positive for any of the pathogens, all of the 5 cows will have their composite samples removed from the refrigerator for individual testing using the MYPRO reagent and/or the SASUB reagent.

4) Protocols for cows that test positive for *Mycoplasma* or *Prototheca* should be developed with the help of the herd's veterinarian. One approach would be to immediately move the positive animals to a separate pen that is milked last. The specific farm protocol should also consider:

- a. If there is a desire to cull these animals as soon as practicable, a follow-up confirmatory composite sample from the individual cow should be tested again using the Acumen reagent or a complete DNA test from an outside laboratory.
- b. Alternatively, the screened positive animal can continue to be milked in the "chronic pen" and, if she becomes clinical, can be immediately culled.
- c. Additional protocols can be developed with help of the herd's veterinarian.

5) Protocols for cows that test positive for *Staph aureus* or *Strep uberis* should be developed with the help of the herd's veterinarian. If these infections are detected early, published research<sup>v, vi</sup> has shown that many of these infections can be cured. According to this research, a successful approach for treating *Staph aureus* is a daily dose of Pirsue® (pirlimycin) for 8 days. Similarly a successful approach for treating *Strep uberis* is a daily dose of Spectramast LC® (ceftiofur) for 8 days. Appropriate withhold times for milk and meat should be determined with the assistance of the herd's veterinarian.

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<sup>i</sup> Ott, S. Costs of herd-level production losses associated with subclinical mastitis in US Dairy Cows. 1999. Proceedings of the 38th annual meeting of National Mastitis Council, Arlington VA. Natl. Mast Coun. Madison WI. 152-156.

<sup>ii</sup> Britten, A. Delivering mastitis control systems to your clients. 1998. Ig Animal Pract. 19 (5) 14-21.

<sup>iii</sup> Wallace, J., Leslie, K., Dingwell, R., Schukken, Y., Baillargeon, P. 2002. An evaluation of a diagnostic and treatment protocol for intramammary infections in early postpartum dairy cows. National Mastitis Conference, 159-160.

<sup>iv</sup> Kelton, D., Petersson, C., Leslie, K., Hansen, D. Associations between clinical mastitis and conception on Ontario dairy farms. 2001. Proceedings of the 40th annual meeting of National Mastitis Council, Arlington VA. Natl. Mast Coun. Madison WI. Poster.

<sup>v</sup> Gillespie, B., Moorehead, H., Lunn, P., Dowlen, H., Johnson, D., Lamar, K., Lewis, M., Ivey, S., Hallberg, J., Chester, S., Oliver, S. Efficacy of extended pirlimycin hydrochloride therapy for treatment of environmental Streptococcus spp and Staphylococcus aureus intramammary infections in lactating dairy cows. Winter 2002. Vet Ther. 3(4) 373-380.

<sup>vi</sup> Oliver, S., Almeida, R., Gillespie, B., Headrick, S., Dowlen, H., Johnson, D., Lamar, K., Chester, S., Moseley, W. Extended ceftiofur therapy for treatment of experimentally-induced Streptococcus uberis mastitis in lactating dairy cattle. Oct. 2004. J. Dairy Science. 87(10) 3322-3329.

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